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THE GRASSES SEDGES AND RUSHES OF THE NORTHERN UNITED STATES

ILLUSTRATED

AN EASY METHOD OF IDENTIFICATION

384.84

By EDWARD KNOBEL

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INTRODUCTORY.

Man's existence depends directly or indirectly, almost entirely on the grasses, a fact which should make this part of the vegetable kingdom the most interesting to us. Aside from their usefulness, their beauty and graceful forms are unsurpassed by any other plants; and, except a few cultivated kinds, they are generally little known because the smallness of their flowering parts on which the student depends to identify them, makes it difficult and tedious to find their names.

A farmer or an experienced agrostologist readily recognizes most grasses by their general appearance, and only in doubtful cases refers to the details. Text books use just the opposite method, leading from the small details to the whole. The system here followed leads gradually from the simplest form of an ear to the most complicated forms, and the student will find this reversed method much easier and simpler. Where grasses have a similar appearance the drawing of the spikelet before each name will insure the student finding the right one. Technical expressions have been avoided as much as possible to make this handbook easier for amateurs. To avoid misunderstandings an explanation of expressions used is here given.

By ear is meant the whole flowering part of a single stem or culm, however complicated and branched. An ear is composed of many small earlets or spikelets, and a spikelet consists of two outer scales, husks or glumes, answering to the calyx of a flower, and containing one, two, or many flowering scales, which enclose the stamens, pistils and fruit; sometimes some flowering scales contain fertile, others sterile flowers.

Spikelets normally one or two-flowered, rarely contain more flowers, but many-flowered spikelets often vary in the number of their flowers. Spikelets on different grass-plants of the same kind differ little in size.

In comparing spikelets observe if their outer scales are of the same length, or one shorter than the other, if pointed or blunt, rough on midrib or not, smaller or larger than the flowering scales, also if the spikelet contains bristles or silky hair inside, and how long these are, compared with the scales.

The heights given are those of medium sizes, and may differ a half one way or the other; for a grass on a barren spot may reach a height of only a few inches, when another of the same kind, on fertile ground, may grow to three or four feet.

The ear to be observed should be fully developed, just after flowering. Many ears undergo considerable changes in their development; they may appear solid or bushy at first, spread to the utmost in flowering time, and contract, droop or collapse when loaded with seed.

As the true grasses are commonly confounded with the wild grasses, sedges and rushes, those included have also been described, somewhat more briefly. They are often interesting on account of the singular shape of their fruit, but are almost useless for foods to man and beast.

The drawings on the plates of Grasses are almost life-size, though for the larger kinds a small ear has been represented.

The spikelets are twice natural size, except those of the brome grasses, which are life size.

For the Sedges and Rushes the plates are about two-thirds life size, and in these instead of spikelets, the fruit pouch and its bract or supporting leaflet has been represented twice their natural size.

GENERAL KEY.

Seed single in each flowering scale.

Stem hollow, with few exceptions, round or flattened, jointed.

Sheath of leaves open at the back.

TRUE GRASSES. *Gramineæ.*

Stem solid, mostly triangular or round, not jointed.

Sheath of leaves closed at the back.

WILD GRASSES. SEDGES. *Cyperaceæ.*

Seeds several in each pouch.

Stem solid, mostly round, flowers regular, consisting of three outer and three inner scales, and one pouch containing the seeds.

RUSHES. *Juncaceæ.*

KEY TO THE GRASSES. *Gramineæ.*

	PLATE.
Ear apparently not branched.	
Spikelets densely crowded; cross-section round,	I
cross-section flat or angular,	II
Spikelets less close, distant, or prickly,	III
Spikelets distant, ear loose and open,	IV
Several ears on end of stem,	V
Ear somewhat branched or interrupted at lower end,	VI
Ear decidedly branched at lower end,	VII
Ear composed of sessile or short-stemmed small ears, like branches,	VIII
Ear branched.	
Spikelets mostly single on end of branches, far apart, comparatively large and few, one-flowered, round, oval, nut or grain-like without a bristle,	IX
with a bristle	X
Spikelets several-flowered, first pair of scales longer than the next, or as long as spikelet,	XI
first pair of scales shorter than the next,	XII
Spikelets mostly numerous, small, flattened, lance-shaped, crowded at end of branches.	
Ears bushy or brush-like, branches upright,	XIII
branches spreading, one-flowered,	XIV, XV, XVI
two-flowered,	XVII
two to many flowered,	XVIII, XIX, XX
branches drooping,	XXI, XXII



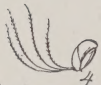
1. TIMOTHY or HERDS' GRASS. *Phleum pratense.* 2½ ft. high; ear 3½ in. long, ear upright and stiff, no bristles, but sharp awns on the glumes. Much cultivated, found everywhere in fields, meadows and roadsides.



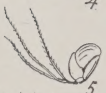
2. MEADOW FOXTAIL. *Alopecurus pratensis.* 1½ ft. high; ear 2 in. long, uppermost leaf shorter than its sheath, bristle short. In meadows.



3. MARSH FOXTAIL. *Alopecurus geniculatus.* 1 ft. high; ear 2 in. long, bristle as long as spikelet, upper leaf as long or longer than its sheath; otherwise like No. 2. In marshes.



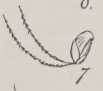
4. GREEN FOXTAIL. *Ixophorus viridis.* 2 ft. high; ear 3 in. long, green, ear flexible, sometimes interrupted at the lower end; bristles upward barbed, longer than the spikelet. In fields.



5. HUNGARIAN GRASS, ITALIAN MILLET. *Ixophorus italicus.* 4 ft. high; ear 8 in. long, yellowish or purplish, thick, nodding; often interrupted in branch-like clusters at the lower end; bristles upward barbed. Much cultivated in fields.



6. YELLOW FOXTAIL, PIGEON GRASS. *Ixophorus glaucus.* 3 ft high; ear 3 in. long, tawny yellow, bristles upward barbed. In fields.

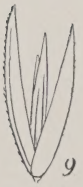


7. FOXTAIL GRASS. *Ixophorus verticillatus.* 1½ ft. high; ear 2½ in. long, pale green, bristles downward barbed. About dwellings.



8. SWEET VERNAL GRASS. *Anthoxanthum odoratum.* 1½ ft. high; ear 1¾ in. long, sometimes interrupted at its lower end. Sweet scented when drying. The earliest grass in spring. Everywhere.

9. SEA SAND-REED, BEACH OR MARRAM GRASS. *Ammophila arenaria.* 3 ft. high; ear 12 in. long, whitish, thick; leaves very long and narrow. (The drawing is half size.) On sandy sea shores.



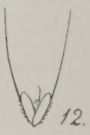
10. MOUNTAIN PHLEUM. *Phleum alpinum.* 1 ft. high; ear 1 in. long. Similar to crippled Timothy grass No. 1. On high mountains.



11. CANARY GRASS. *Phalaris canariensis.* 2 ft. high; ear 1 in. long. The seed is the common food for canary birds. About dwellings.



12. BEARD GRASS. *Polypogon monspeliensis.* 1½ ft. high; ear 2½ in. long. From Europe or Asia. Near the coast.



See also CANARY REED, pl. VI; SPARTINA, pl. VIII.



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1. Cultivated Rye. *Secale cereale.* 5 ft. high; ear 5 in. long; earlets in pairs, one-flowered, pale bluish green, alternate. In fields, roadsides or waste places.

Similar in appearance are:

2. Slender Wild Rye. *Elymus striatus.* 2½ ft. high; ear 3½ in. long; earlet containing, besides one fertile flower, one or two short, awned, imperfect ones; Awns 1¼ in. long. In woods or on river banks.

3. Virginia Wild Rye. *Elymus virginicus.* 2½ ft. high; ear 4½ in. Like the last, but awns short, about ½ to ¾ in. long. In marshes along the brooks.

4. Nodding Wild Rye. *Elymus canadensis.* 4 ft. high; ear 8 in. long. Like foregoing, but awns 1¼ in. long and very rough. On river banks.

5. Common Wheat. *Triticum vulgare.* 3½ ft. high; earlets in fours or fives. There are many varieties between *var. æstivum*, long awned wheat, and *var. hibernum*, awnless wheat. The first kind is mostly grown as winter wheat, and the other, as summer wheat. In fields.

6. Barley. *Hordeum vulgare.* 3 ft. high; ear 3 in. less the long awns; earlet in threes, all fertile. Cultivated.

7. Squirrel-tail Grass. *Hordeum jubatum.* 1½ ft. high, ear 3 in. long. Very slender bristles. Near the coast.

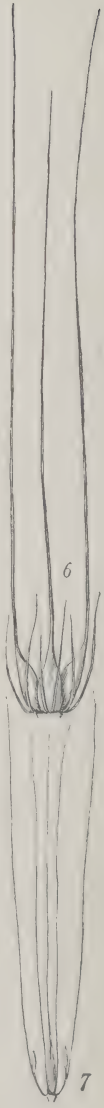


PLATE II



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1. Quitch, or Couch Grass. *Agropyron repens.* 2½ ft. high; ear 5 in. long. Its long, running root-stocks and their vitality are of great trouble to the gardener. Variable, with short awns, or without. Grows everywhere in fields and gardens, along fences and roadsides.

2. Purplish Wheat Grass. *Agropyron violaceum.* 1½ ft. high; ear 2½ in. long. Is very similar to above, but has no running roots. In fields.



3. Awned Wheat Grass. *Agropyron caninum.* 2 ft. high, ear 6 in. long. Has awns longer than the glumes, and no running roots. In cultivated ground.

4. Dogtail Grass. *Cynosurus cristatus.* 2 ft. high; ear 3 in. long, and spikelets of two kinds. Cultivated for hay.

5. Rye Grass. *Lolium perenne.* 1½ ft. high; ear 5 in. long. Earlets further apart than in quitch grass, attached edgewise to the stem. The first glume smaller than the earlet. In cultivated grounds and waste places.

6. Darnel. *Lolium temulentum.* 3 ft. high; ear 8 in. long. Like the last, but first outside glume larger than the earlet. Seeds said to be poisonous. In grain fields.



7. Gama Grass. *Tripsacum dactyloides.* 6 ft. high; ear 7 in. long, often in pairs or threes, stout; upper half of ear, male flowers, lower half fertile flowers. On streams and in marshes.

8. Hairlike Fescue Grass. *Festuca capillata.* (See Fescue Grasses, pl. VII.)

9. Prickle Grass. *Nazia racemosa.* 8 in. high; ear 2½ in. long. Outer scales covered with hooked prickles. In waste places about wharves.

10. Burr Grass, Hedgehog Grass. *Cenchrus tribuloides.* 1½ ft. high; ear 2 in. long; earlets inside of the prickly burr. On sandy shores.

PLATE III



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1. Broom Beard Grass. *Andropogon scoparius.* 3 ft. high; ear 1½ in. long; earlets with a long, slender bristle, their stalks hairy. In sandy fields.

2. Forked Beard Grass. *Andropogon furcatus.* 4½ ft. high; ear 3½ in. long, in pairs.

3. Virginian Beard Grass. *Andropogon virginicus.* 3 ft. high; ear 1 in. long, in pairs; more feathery, but otherwise like last. In fields and along roadsides.



4. Bottlebrush Grass. *Hystrix hystrix.* 3 ft. high; ear 5 in. long; earlets opposite each other on the stem, two-flowered, and with long, slender awns. In rocky woods.

5. Poverty Grass. *Aristida dichotoma.* 1 ft. high; ear 3½ in. long. Forked, branching. Resembles 6, only smaller. In sandy soil.



6. Slender Aristida. *Aristida gracilis.* 14 in. high; ear 5 in. long. In sandy fields.

7. Purplish Aristida. *Aristida purpurescens.* 2 ft. high; ear 10 in. long. In dry ground.

8. Sea-beach Aristida. *Aristida tuberculosa.* 15 in. high; ear 6 in. long. Like 7, more spreading. On seashore.



9. Mat Grass, Wirebent. *Nardus stricta.* 10 in. high; ear 2 in. long. Leaves hair-like, in tufts.



PLATE IV



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1. Slender Paspalum. *Paspalum setaceum.* 1½ ft. high; ear 2½ in. long, one-sided, single at the top, but short ones protruding from the sheaths. In dry fields.




2. Field Paspalum. *Paspalum lævе.* 2 ft. high; ear 4 in. long, one-sided, alternate branching on stem, hairy at the joints, otherwise smooth. In moist fields.



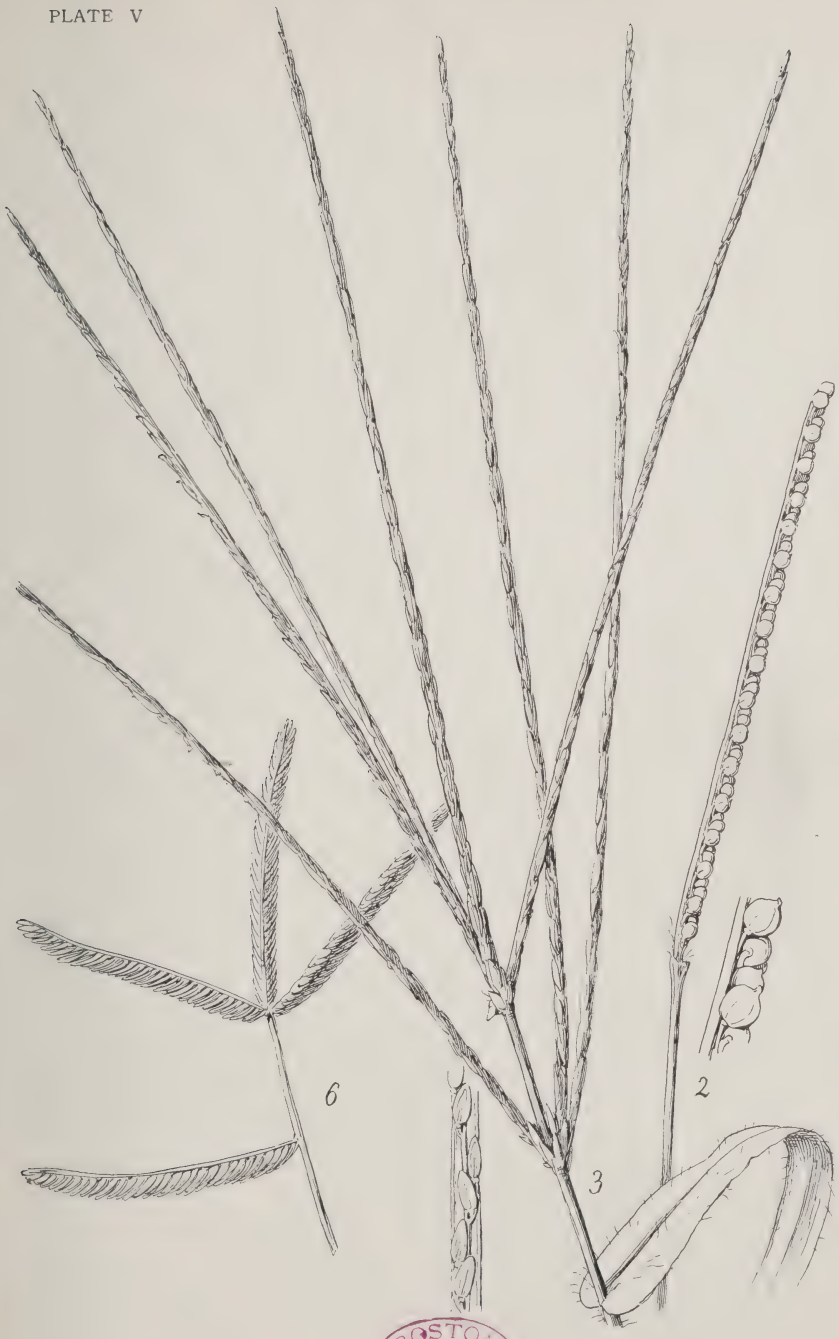

3. Large Crab Grass. *Syntherisma sanguinalis.* Upright or creeping, 2 ft. long, spreading; ear 4 in. long, several on end of stalk; leaves hairy, wide. A common weed in cultivated grounds.

4. Small Crab Grass. *Syntherisma linearis.* 15 in. long; ear 3 in. long; leaves smooth; otherwise like the last.

5. Slender Finger Grass. *Syntherisma filiformis.* Upright, 2½ ft. high, slender. Ear 4 in. long, very narrow; leaves narrow. In sandy fields.

6. Yard Grass. *Eleusine indica.* Upright, or spreading in patches, 1 ft. high; ear 2 in. long, earlets many flowered; leaves smooth. A common weed in waste places.

PLATE V



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1. Canary Reed Grass. *Phalaris arundinacea.* 4 ft. high; ear 6 in. long. Leaves smooth or rough. In marshes or on streams.



2. Narrow False Oat. *Trisetum subspicatum.* 1 ft. high; ear 3 in. long; earlets 3-flowered with 3 bristles; stem and leaves softly hairy. In rocky places.



3. Oat Grass. *Arrhenatherum elatius.* 3 ft. high; ear 8 in. long; earlets two-flowered, with one bristle; leaves rough, like No. 2, but more open. In fields.



4. Long-leaved Rush Grass. *Sporobolus longifolius.* 2½ ft. high; ear 7 in. long, partly enclosed in the upper sheath; leaves long. In dry soil.



5. Small Rush Grass. *Sporobolus neglectus.* 9 in. high; ear 1½ in. long, partly enclosed in sheath, which is much inflated; leaves short.



6. Short-leaved Rush Grass. *Sporobolus brevifolius.* 1 ft. high ear 1½ in. long, not enclosed in sheath; leaves narrow and short.

7. Marsh Muhlenbergia. *Muhlenbergia racemosa.* (See plate VII.)

Sweet Vernal Grass is sometimes branched at lower part of ear; also Hungarian Grass, and Sea Sand Reed. The cultivated Ribbon Grass with white and green striped leaves, is a variety of Canary Reed Grass.

PLATE VI



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1. Orchard Grass. *Dactylis glomerata.* 3 ft. high; ear 5 in. long. Much cultivated for fodder, and on shady lawns.



2. Slender Fescue. *Festuca octoflora.* 1 ft. high; ear 3½ in. long, often one-sided and not branched; earlets 7 to 13-flowered; awn as long as scale. In sandy fields.

3. Hairlike Fescue Grass. *Festuca capillata.* 1 ft. high; ear 1½ in. long; earlet 4 to 5 flowered, not awned; leaves hairlike, tufted. (See pl. III., fig. 8.)



4. Ratstail Fescue Grass. *Festuca myurus.* 1½ ft. high; ear 4 in. long, one-sided; earlets 5-flowered; awns ½ in. long, longer than its scale. In waste places and fields.

5. Red Fescue Grass. *Festuca rubra.* 2 ft. high; ear 4½ in. long; earlets 3 to 6-flowered; short awned or only pointed. In fields.



6. Sheep's Grass. *Festuca ovina.* 10 in. high; ear 2½ in. long, one-sided, often unbranched; Earlets 3 to 8-flowered; short awns, about half the length of its scale; leaves tufted, very variable. In fields.

7. Marsh Muhlenbergia. *Muhlenbergia racemosa.* 2 ft. high; ear 3½ in. long, dense, branch-ears ¾ in. long, oval; earlets awned, no bristle. (See plate VI, fig. 7). In meadows.

8. Wood Muhlenbergia. *Muhlenbergia sylvatica.* 2 ft. high; ear 5 in. long, loose; earlets awned, and with one long bristle. In moist woods.



9. Rock Muhlenbergia. *Muhlenbergia sobolifera.* 2½ ft. high; ear 4½ in. long; small ears ¾ in. long, very slender; earlets not awned or bristled. In rocky woods.

10. Meadow Mulenbergia. *Muhlenbergia mexicana.* 3 ft. high; ear 4 in. long, small ears 1½ in. long; earlets awned, but not bristled. Resembles No. 8. In swamps.



11. Slender Muhlenbergia. *Muhlenbergia tenuiflora.* 2½ ft. high; ear 7 in. long, slender; earlet not awned, but with one long bristle. Resembles No. 9. In rocky woods.

12. Nimble Will, Dropseed Grass. *Muhlenbergia diffusa.* 2 ft. long, creeping, much branched; ear 5 in. long; earlet sharp pointed and with one long awn. Resembles No. 9. On dry hills and woods.



13. Long-awned Hair Grass. *Mulenbergia capillaris.* 2½ ft. high; ear 9 in. long, purplish; earlets single on end of branches. Resembles *Eragrostis pectinacea*, but earlets one-flowered and long awned. In dry, sandy, rocky soil.



PLATE VII



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1. Cockspur Grass, Barnyard Grass. *Panicum crus-galli.* 3 ft. high; ear 10 in. long, small ears in clusters on the stem; earlets with one long awn. In fields and around farms.

2. Salt Marsh Cockspur Grass. *Panicum walteri.* 4½ ft. high; ear 12 in. long, brownish purple, small ears alternate on the stem, earlets with two barbed awns of different length, one very long; sheath often hairy.

3. Tall Marsh Grass. *Spartina cynosuroides.* 4 ft. high; branch ears 3½ in. long, numerous, on very short stalks, otherwise like No. 5. In swamps and streams.

4. Salt Reed Grass. *Spartina polystachya.* 6 ft. high; branch ears 3 in. long, numerous, on long stalks, otherwise like No. 5. On brackish waters.

5. Salt Meadow Grass. *Spartina patens.* 2 ft. high; branch ears 1½ in. long, few and far apart; leaves very narrow. On salt meadows.

6. Smooth Marsh Grass. *Spartina stricta.* 2 ft. high; branch ears 1½ in. long, few and far apart, ears not spreading. Common along the coast.

See Field Paspalum, plate v.

PLATE VIII



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Earlets ¼ of in. long, egg-shaped.



1. Millet. *Panicum miliaceum.* 1½ ft. high; ear 7 in. long, broad and bushy, earlets growing upwards; leaves long and broad, one leaf close to ear. Appears like Blunt Manna, pl. xiii. Formerly cultivated for grain. In waste places.



2. Large Fruited Panicum. *Panicum macrocarpon.* 2 ft. high; ear 4½ in. long, its branches stout, earlets broad; leaves short, heart-shaped, broad and smooth. In wet ground.



3. Porter's Panic Grass. *Panicum porterianum.* 1½ ft. high; ear 2½ in. long, branches stout; leaves short, broad, heart-shaped and hairy. In most thickets.



4. Sea-beach Panic Grass. *Panicum amarum.* 2 ft. high; ear 9 in. long, loose, bushy, earlets pale; slender and pointed-leaved to the ear. Sandy shores.



5. Tall Smooth Panic Grass. *Panicum virgatum.* 4 ft. high; ear 12 in. long, branches hairlike, slender, earlets purplish; leaves long and narrow. Moist sandy soil.



6. Northern Dropseed. *Sporobolus heterolepis.* 2 ft. high; ear 7½ in. long; leaves bristle-like, narrow. In dry soil.



7. Holy or Seneca Grass. *Savastana adorata.* 1½ ft. high; ear 3 in. long, one-sided; leaves very short and sweet-scented.



8. Alpine Holy Grass. *Savastana alpina.* Very like the last, but with a bent bristle. On mountains.

Earlets ⅛ of an inch long.



9. Hispid Panic Grass. *Panicum clandestinum.* 2¾ ft. long; ear 6 in. long, with many slender clustered branches and many earlets; leaves broad, heart-shaped. Low thickets.



10. Witch Grass. *Panicum capillare.* 1½ ft. high, or creeping; ear 12 in. long, many fruited, slender branched; leaves middling wide and long. A common weed in fields. Similar in appearance to *Eragrostis*, pl. XIX.; but hairy, and spikelets one-flowered.



11. Slender Panic Grass. *Panicum xanthophysum.* 1½ ft. long; ear 2½ in. long, of few earlets, on short branches which lie close to stem. In dry grounds.



12. Spreading Panic Grass. *Panicum proliferum.* 1½ ft. high; ear 10 in. long, with many earlets on slender hairlike branches; leaves long and narrow. In wet soil.



13. Starved Panic Grass. *Panicum depauperatum.* 1 ft. high; ear 2 in. long, of few earlets, on stiff branches; leaves long and narrow. In woods and clearings.



14. Scribner's Panic Grass. *Panicum scribnerianum.* 15 in. high; ear 2½ in. long. Like the last, but leaves short, upper leaf close to the ear.



15. Sand Dropseed. *Sporobolus cryptandrus.* 2½ ft. high; ear 8 in. long, many earlets on underside of branches half enclosed in upper narrow leaf. On the shore.



16. Millet Grass. *Milium effusum.* 4 ft. high; ear 6½ in. long, open; few earlets on ends of slender, clustered drooping branches; leaves pointed at both ends. In woods.

Earlets about 1-16 of an inch long.



17. American Panic Grass. *Panicum columbianum.* 16 in. high; ear 1 in. long; leaves short. In fields and woods.



18. Northern Panic Grass. *Panicum boreale.* 1½ ft. high; ear 3 in. long, much branched, very slender with few earlets; leaves broad. In wet grounds.



19. Eaton's Panic Grass. *Panicum eatoni.* 2½ ft. high; ear 5 in. long, bushy, with many earlets, crowded; lower leaves broad, upper narrow. On sea shore.



20. Wood Panic Grass. *Panicum minus.* 16 in. high; ear 6 in. long, open, with few earlets; leaves long and narrow, hairy.



21. Hairy Panic Grass. *Panicum pubescens.* 1 ft. or more high, spreading on the ground; ear 3 in. long, few earlets on hairlike wavy branches; leaves, stem and earlets hairy. Common in dry soil.



22. Shining Panic Grass. *Panicum nitidum.* 15 in. high; ear 1½ in. long, with few earlets on hairlike spreading branches; leaves narrow. Common in sandy soil.



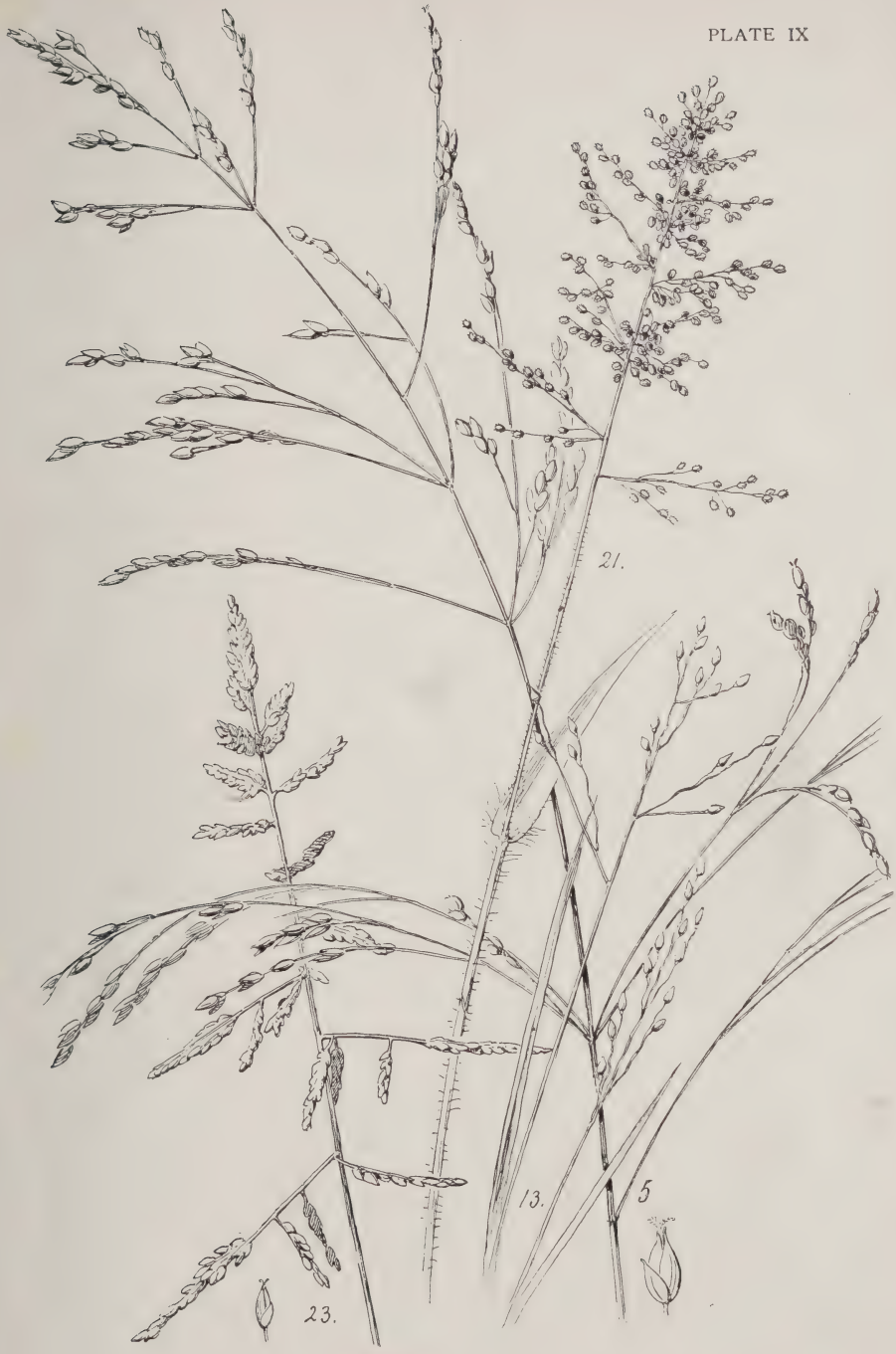
23. Agrostis-like Panic Grass. *Panicum agrostidiformis.* 1¾ ft. high; ear 8 in. long, with many earlets, crowded on the lower side of branches; leaves long and narrow. In wet grounds.



24. Warty Panic Grass. *Panicum verrucosum.* 1½ ft. long, slender, spreading; ear 7 in. long, slender, nodding, with few earlets; leaves long and narrow. Wet grounds.



25. Late Flowering Dropseed. *Sporobolus serotinus.* 1 ft. high; ear 6 in. long, with many long stalked earlets on the slender branches. In wet sandy soil.



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1. Black Oat Grass. *Stipa avenacea.* 2 ft. high; ear 7 in. long, its branches upright and spreading, with black seeds and a twisted and bent awn, 2 in. long. In dry woods.

2. Macoun's Stipa. *Stipa macounii.* 1½ ft. high; ear 3½ in. long, contracted; branches and awns upright, awn ½ in. long and twisted. On mountains.

3. Brachyelytrum. *Brachyelytrum erectum.* 2 ft. high; ear 4 in. long branching upwards; awn 1 in. long and straight; leaves broad and pointed at both ends. In moist ground.

4. Black Fruited Mountain Rice. *Oryzopsis melanocarpa.* 2 ft. high; ear 7 in. long, awn wavy about ½ in. long; leaves wide. In rocky woods.

5. White Grained Mountain Rice. *Oryzopsis asperifolia.* 15 in. high; ear 2½ in. long; awn wavy and ½ in. long; leaves medium. In woods.

6. Slender Mountain Rice. *Oryzopsis juncea.* 15 in. high; ear 2 in. long; awn very short; leaves hairlike. Among dry rocks.

7. Indian Rice, Water Oats. *Zizania aquatica.* 6 ft. high; ear 1½ ft. long, its upper half fertile flowers, the lower half sterile flowers, awnless and drooping. In swamps.

To these belong Feather Grass, *Stipa pennata*, cultivated for ornament, in which the long awn is transformed to a beautiful feather; and Rice. *Oryza sativa*, cultivated southward.



PLATE X



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1. Cultivated Oat. *Avena sativa.* 3 ft. high; earlets ¾ in. long, with bent bristles of about the same length. Cultivated in fields, and on roadsides.

2. Wild Oat. *Avena fatua.* 3 ft. high; earlets ¾ in. long, inside scales covered with brown hair. Otherwise like cultivated oat. In waste places.

3. Purple Oat. *Avena striata.* 1½ ft. high; ear 3½ in. long; the outside glumes purple, and smaller than the earlet. In woodlands.

4. Common Wild Oat Grass. *Danthonia spicata.* 1¾ ft. high; ear 1½ in. long, few earlets; the leaves narrow. Abundant everywhere.



5. Flat-stemmed Wild Oat Grass. *Danthonia compressa.* 2½ ft. high; ear 3½ in. long, very slender, few earlets; leaves narrow, stems flat or angular. In open woodland.

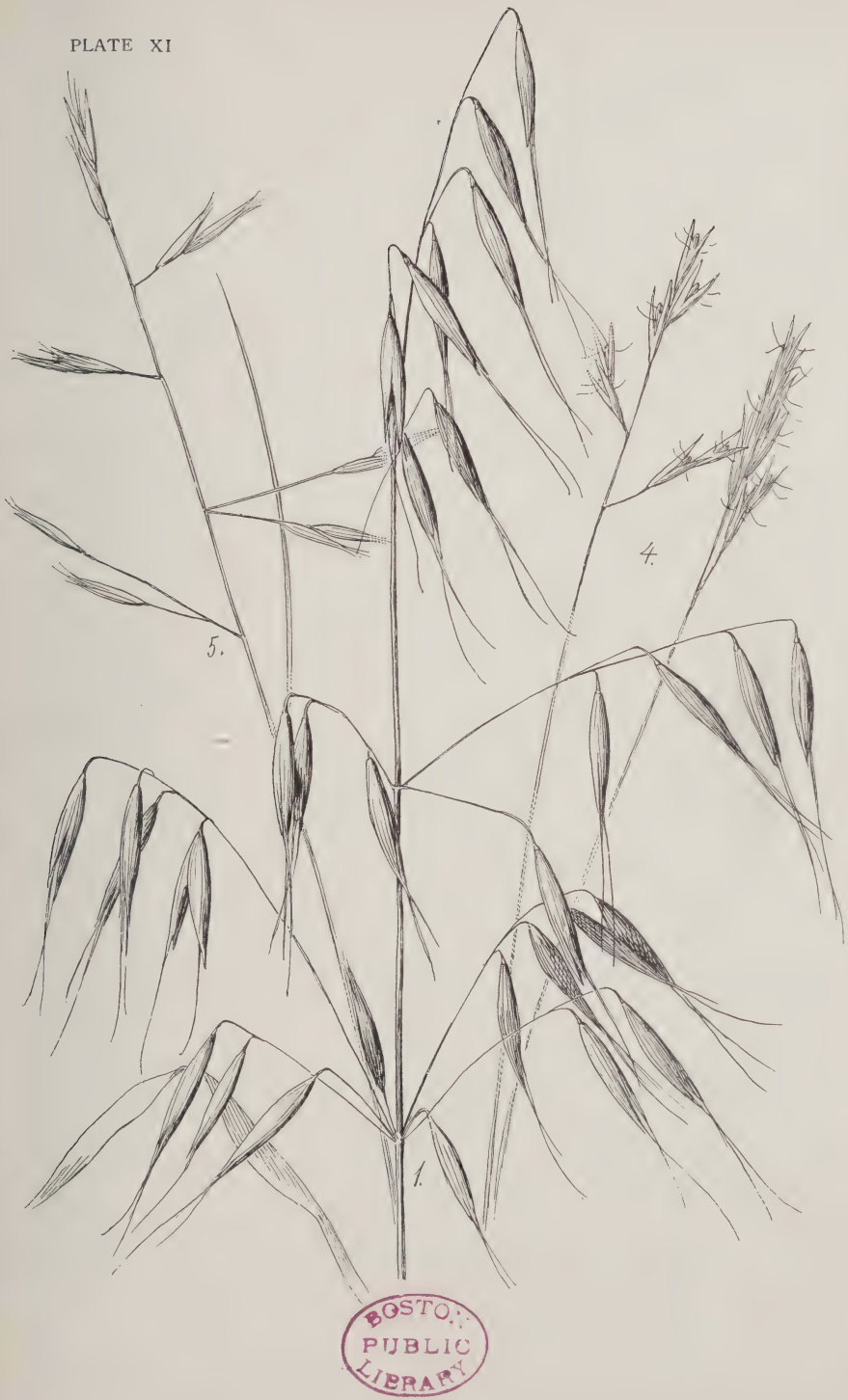


6. Silky Wild Oat Grass. *Danthonia sericea.* 2½ ft. high; ear 3½ in. long, earlets numerous, with silky hair on the sheaths; leaves broad, stems round. In sandy soil.



Oat Grass, see plate vi. fig. 3.

PLATE XI



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1. Cheat or Chess. *Bromus secalinus.* 2 ft. high; ear 5 in. and earlets ¾ in. long, few, with short awns, drooping. Common in grain fields and near fences.

2. Wood Chess. *Bromus ciliatus.* 3 ft. high, ear 7 in. long, earlets 1 in. long; awns half as long as scales, drooping. More earlets but less wide than in Cheat. In woods.

3. Downy Brome Grass. *Bromus tectorum.* 1¼ ft. high; ear 4 in. long, earlet ¾ in. long, with awns of the same length, earlets and sheath downy, drooping. In fields.

4. Barren Brome Grass. *Bromus sterilis.* 1½ ft. high; ear 7 in. long, earlets flattened; awns 1 in. long, drooping. Waste grounds and river banks.

5. Wild Chess. *Bromus kalmii.* 2½ ft. high; ear 4 in. long, earlets ¾ in. long; awns short, drooping. In woods.

6. Hairy Brome Grass. *Bromus asper.* 4 ft. high, slender; ear 9 in. long, earlets 1¼ in. long; awns as long as glumes; leaves hairy. In waste places.

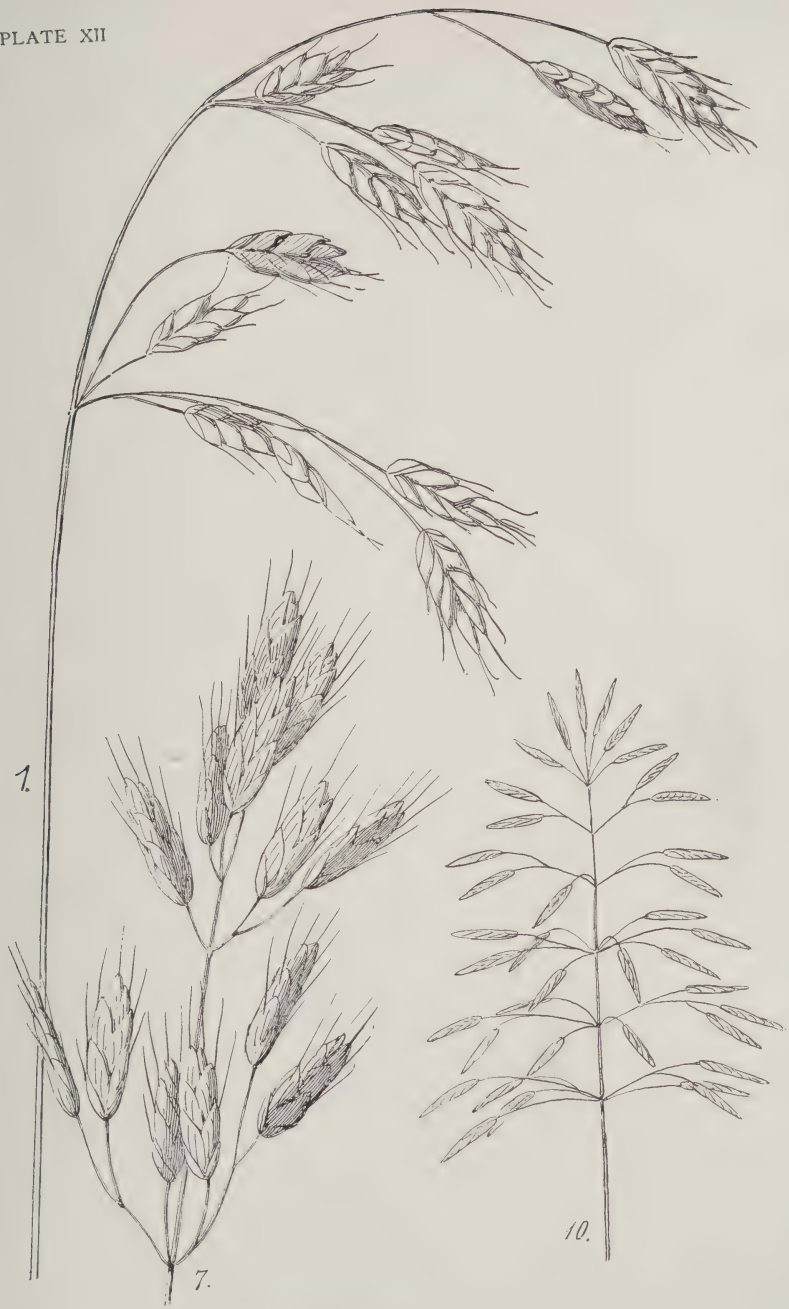
7. Smooth Brome Grass, Upright Chess. *Bromus racemosus.* 2 ft. high; ear 5 in. long, earlets upright, awns as long as the shining scales. In fields and near fences.

8. Corn Brome. *Bromus squarrosus.* 1 ft. high; ear 4 in., nodding; awns as long as the shining scales, bending outward; leaves very narrow, hairy. Near wharves.

9. Great Fescue Grass. *Festuca gigantea.* 3 ft. high; ear 9 in. long, earlet ¾ in. with awn of the same length, upright. Resembles No. 7. In waste grounds.

10. Hungarian Brome. *Bromus inermis.* 3 ft. high; ear 6 in. long, earlets awnless, 1¼ in. long. (Drawing of ear reduced.) Cultivated for hay.

PLATE XII



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1. Nuttall's Reed Grass. *Calamagrostis cinnoides* 4 ft. high; ear 5 in. long, white silky hair in earlets longer on one side than on the other. Common in ditches and swamps.



2. Pickering's Reed Grass. *Calamagrostis breviseta.* 15 in. high; ear 3½ in. long, open during flowering; short silky hair on one side only. On mountains.



3. Bog Reed Grass. *Calamagrostis confinis.* 2½ ft. high; ear 6 in. long; silky hair nearly equal in length on both sides. North-westward.



4. Narrow Reed Grass. *Calamagrostis stricta* or *neglecta.* 2 ft. high; ear 3¾ in. long; silky hairs about half the length of spikelet and nearly even; leaves narrow. Mountains northward. See also Langdorf's Reed, pl. xvi.



5. Blunt Eatonia. *Eatonia obtusata.* 1¼ ft. high; ear 4 in. long, two-flowered; branches of ear very short, showing stem between the clusters. In dry soil.

6. Pennsylvania Eatonia. *Eatonia pennsylvanica.* 2 ft. high; ear 5 in. long, slender, open. Hilly woods.



7. Indian Grass. *Chrysopogon avenaceus.* 6 ft. high; ear 8 in. long, rather open; earlets in pairs, yellowish brown; leaves broad. In dry fields.

Closely related to No. 7, is Broom Corn, Guinea Corn, Indian Millet, *Sorghum vulgare* and *halepense.* Spikelets with two sterile flowers instead of the feathers in No. 7. Cultivated southward. Sugar cane, *Saccharum officinarum*, also belongs here.



8. Reed. *Phragmites communis.* 8 ft. high; ear 9 in. long, very broad, long, silky, hairy, several-flowered; leaves 2 in. wide. On the borders of ponds and swamps.

9. Long Manna Grass. *Panicularia elongata.* 2½ ft. high; ear 9 in. long, nodding, very slender, with few many-flowered earlets. In wet woods.









PLATE XIII



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Continued from page 32.

10. Blunt Manna Grass. *Panicularia obtusa.* 2 ft. high; ear 5 in. long. On the edge of ditches and swamps.

See also Millet, pl. IX, No. 1; ear similar, but earlets one-flowered.

11. Marsh Spike. *Distichlis spicata.* 1 ft. high; ear 1½ in. long; leaves narrow. Salt marshes.

Note: — Ears resembling Long Manna Grass are Nodding Fescue, Weak Spear, and Northern Spear, pl. XX., and some Panicums, pl. IX. Ears resembling Nuttall's Reed, besides Nos. 1 to 8, are Sea Beach Panicum, and Millet, pl. IX.

1. Fiorin, White Bent Grass. *Agrostis alba.* 20 in. high; ear 6 in. long, greenish, purplish, or brownish; earlets ⅛ in., usually white inside; scales carmine red with a green keel; very variable in size and appearance. Much cultivated. Ear contracted after flowering, and ligule (skinny piece which joins the leaf to the stem) long and pointed. On roadsides and in meadows.


1

Red Top, Herds' Grass. *Agrostis alba var. vulgaris.* Ear spreading after flowering; ligule short and blunt. In low meadows and pastures.

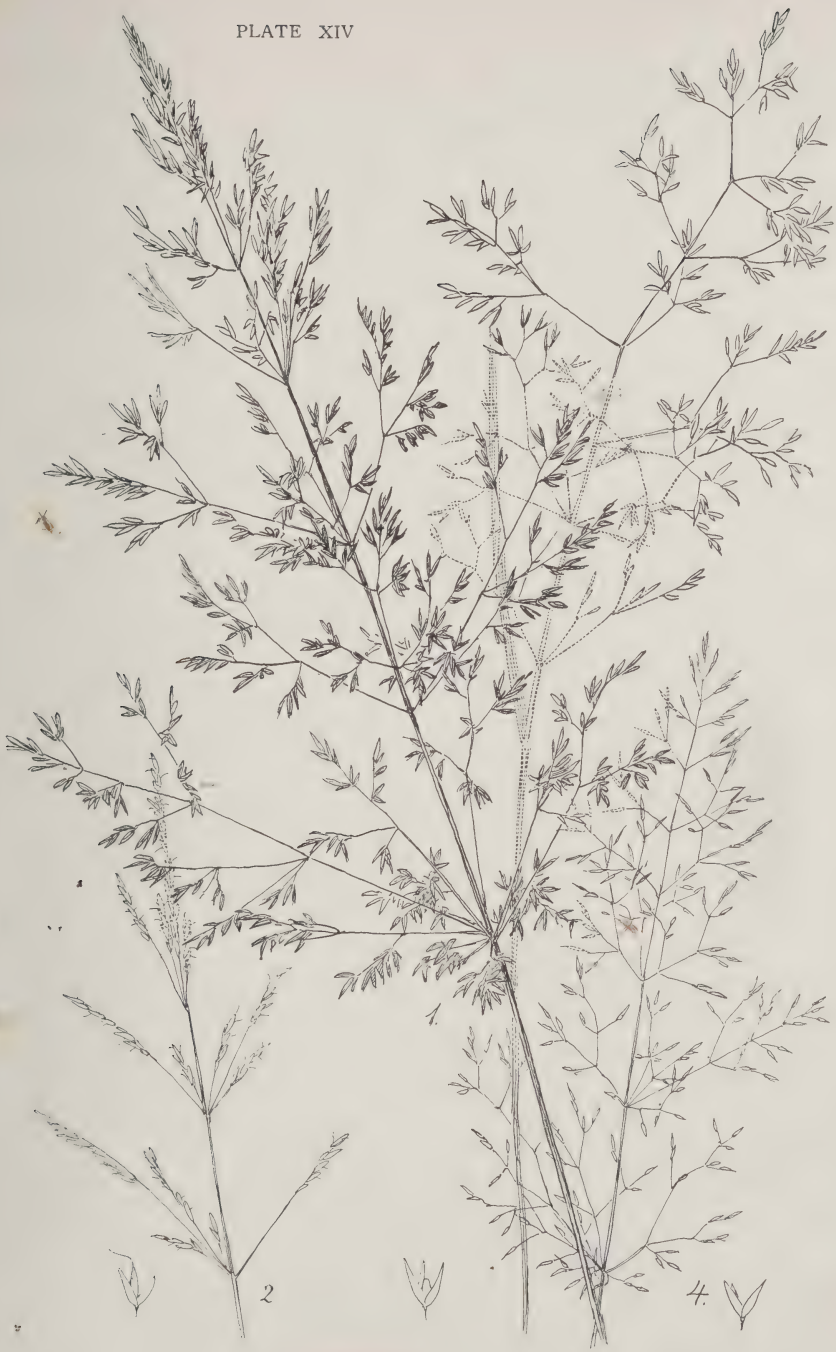

2

2. Brown Bent Grass. *Agrostis canina.* 1½ ft. high; ear 4 in. long, earlet with a small, bent bristle; lower half of branches bare, straight, and upper half crowded with earlets. On roadsides and in meadows.


3

3. Red Bent Grass. *Agrostis rubra.* 15 in. high; ear 3¾ in. long; earlet with small bristle, but branches three-fourths their length bare, wavy, and one-fourth sparingly beset with earlets. On high mountains and northward.

PLATE XIV



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4. Thin Grass. *Agrostis perennans.* 1¼ in. high; ear 6 in. long, no bristle, branches hairlike and branching more than half their length, earlets 1-16 in. long. In woods.

5. Rough Hair Grass. *Agrostis hyemalis* or *scabra.* 2 ft. high; ear 15 in. long, very open, purplish, branches hairlike, rough, with earlets at their tips only, 1-16 in. long. In cleared woodlands.

6. New England Bent Grass. *Agrostis novæ-angliæ.* 1 ft. high; ear 6 in. long; like a stout Thin Grass with earlets of double size. In the mountains and northward.

7. Silky Bent Grass. *Apera spica-venti.* 1½ ft. high; ear 6 in. long; like Rough Hair Grass; spikelets ⅛ in. long and with a long bristle. Near the shore.

Note:—Ears resembling Red Top and White Bent Grass are Silky Bent Grass, pl. xv., Blue Joint, pl. xvi., Sand Dropseed, pl. ix, Grove Bent Grass and False Red Top, pl. xx.

Ears resembling Thin Grass are Rough Hair Grass, pl. xiv., Late Flowering Dropseed, pl. ix, Hairlike Muhlenbergia pl. vii, 13; the greater part of the Panic Grasses, pl. ix., some of the Eragrostis, pl. xix, and Deschampsia, pl. xvii.

PLATE XV



5.

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1. Blue Joint Grass. *Calamagrostis canadensis.* 4 ft. high; ear 6 in. long; the white silky hair on one side, inside of the spikelet, half as long as on the other. Valued as fodder grass. In swamps and border of rivers.


1

2. Langsdorf's Reed Grass. *Calamagrostis Langsdorfii.* 3 ft. high; ear 4 in. long, the white silky hair of even length, about ¾ the length of the spikelet. Less spreading than No. 1. In mountain swamps.


2


3

3. Rice Cut Grass. *Homalocenchrus oryzoides.* 2½ ft. high; ear 7 in. long, earlets ¼ in. long; leaves very rough. In wet woody swamps.


4


5

4. White Grass. *Homalocenchrus virginicus.* 2 ft. high; ear 5 in. long, earlets ⅛ in. long; leaves short; stems slender; otherwise like No. 3. In wet woods.

5. Sand Grass *Sieglingia purpurea.* 2 ft. high; ear 2 in. long; leaves short. On sea beaches. See pl. xvii, fig. 6.



PLATE XVI



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1. Velvet Grass. *Holcus lanatus.* 2½ ft. high; ear 4 in. long, whitish velvety all over, earlets two-flowered. In fields and meadows.



2. Silvery Hair Grass. *Aira caryophillea.* 8 in. long; earlets ⅛ in. long, two-flowered, with two bristles, branches in pairs, ear shining silvery; leaves bristle-like. In fields.



3. Tufted Hair Grass. *Deschampsia cæspitosa.* 3 ft. high; ear 6 in. long earlets two-flowered with two short bristles; branches in threes or fours; leaves flat. In wet grounds.



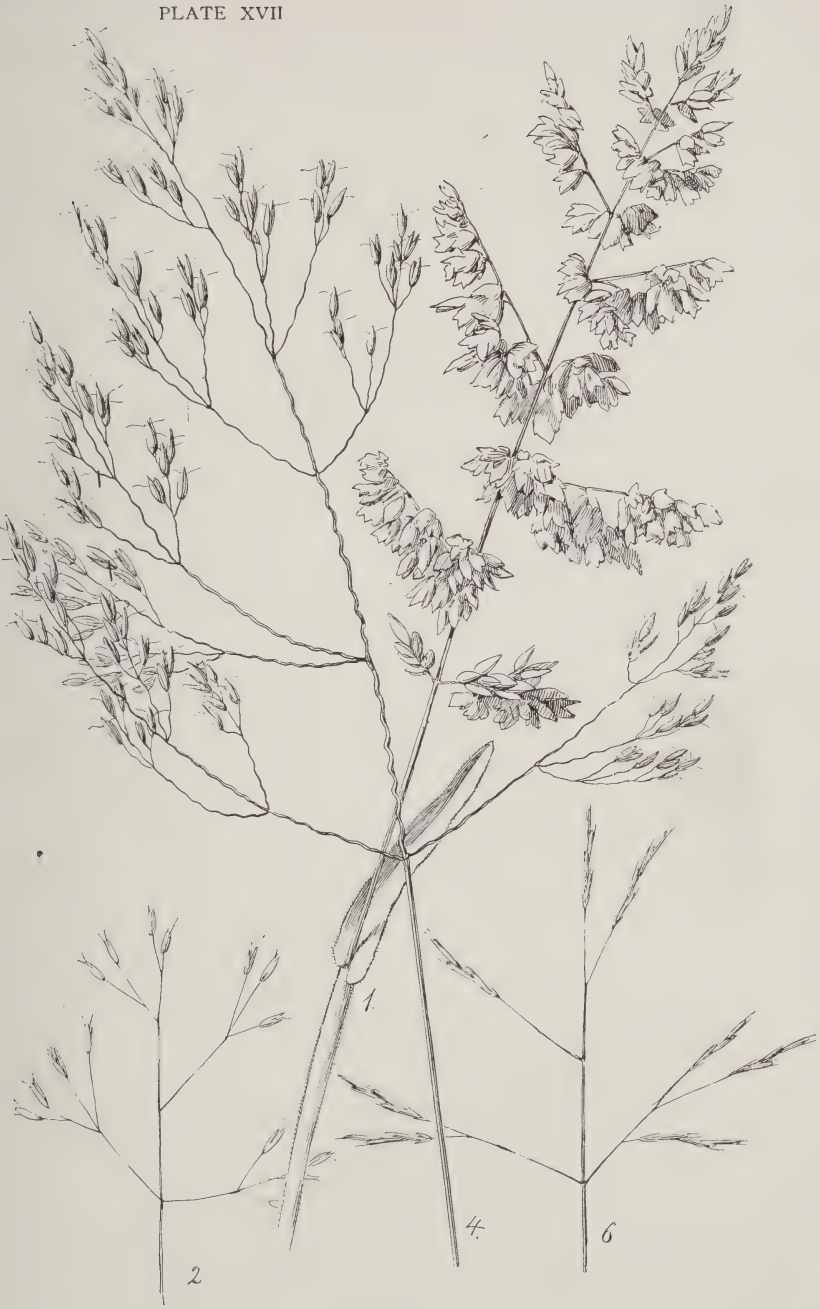
4. Wavy Hair Grass. *Deschampsia flexuosa.* 1½ ft. high; ear 5 in. long, earlet ¼ in. long, two-flowered, with two long bent bristles, branches in pairs; leaves bristle-like. In dry soil.

5. Mountain Hair Grass. *Deschampsia atropurpurea.* 1 ft. high; ear 1½ in. long, purple earlets ¼ in. long, with two short bent awns, branches single or double, few; leaves flat. White Mountains and northward.

6. Sand Grass. *Sieglingia purpurea.* See pl. xvi., No. 5.

Note: — Ears resembling Wavy Hair Grass are Red Bent, pl. xiv., New England Bent, pl. xv., Northern Dropseed pl. ix., and Northern Manna Grass, pl. xxi.

PLATE XVII





1

1. Sharp Scaled Manna Grass. *Panicularia acutiflora.* 2 ft. high; stems flat, half creeping below; ear 9 in. long, simple, with few branches very far apart, fertile scales pointed and long. In water covered places.



4

2. Floating Manna Grass. *Panicularia fluitans.* 3½ft. long; stems flat; ear 1 ft. long, fertile scales of earlet blunt; short, otherwise like last.



5



2

3. Tall Meadow Fescue. *Festuca elatior.* 3½ ft. high; ear 9 in. long; leaves long and medium wide. In cultivated ground, or roadsides.

4. Goose Grass. *Puccinellia maritima.* 1½ ft. high; ear 4 in. long; resembles the last, but leaves are short and very narrow. In salt marshes.

5. Salt Meadow Diplachne. *Diplachne fascicularis.* 2 ft. high, grows in tufts; ear 8 in. long. Like tall meadow fescue but ear more slender, earlets few and farther apart; leaves long and narrow; flowering scales with two short teeth and short awn. In brackish marshes.



3

Strong Scented Eragrostis. *Eragrostis major.* (See pl. XIX.)

PLATE XVIII



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1. STRONG SCENTED ERAGROSTIS. *Eragrostis major.* 1½ ft. high; ear 4 in long, earlets flat, many-flowered crowded into a close ear, upright. (See pl. XVIII., fig. 6.) In sandy, waste places.



2. CREEPING ERAGROSTIS. *Eragrostis reptans.* 9 in. long; creeping upright branches about 3 in. long, sterile and fertile spikelets on different plants, sterile scales pointed. On gravely river banks.



3. LOW ERAGROSTIS. *Eragrostis minor.* 15 in. high; ear 3½ in. long; like Strong Scented Eragrostis, but ear open with few earlets two or four on lower branch. Cultivated ground and waste places.



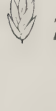
4. PURSH'S ERAGROSTIS. *Eragrostis Purshii.* 1 ft. high, creeping below, tufted; ear open, 6 in. long, earlets on both sides of branches; leaves narrow. On dry ground.



5. PURPLE ERAGROSTIS. *Eragrostis pectinacea.* 2 ft. high; ear 15 in. long, earlets mostly on lower side of branches. On dry soil.



6. TUFTED ERAGROSTIS. *Eragrostis pilosa.* 1 ft. high; ear 4 in. long. On cultivated grounds.



7. HAIRLIKE ERAGROSTIS. *Eragrostis capillaris.* 1 ft. high; ear 10 in. long; stems hairlike.

NOTE: — Ears resembling Purple Eragrostis are *Eragrostis capillaris* and *pilosa*, Witch Grass and Dropseed, pl. IX.

PLATE XIX



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1

1. Low Spear Grass. *Poa annua.* Less than 1 ft. high; ear 2 in. long, one-sided; stems flattened, branches spreading, earlets short stalked, crowded. Cultivated and waste ground.


2

2. English Blue Grass. *Poa compressa.* 1¼ ft. high; ear 4 in. long; branches mostly in pairs, pointed upwards; leaves pale; stem very flat and broad, dark blue green. On roadsides.


3

3. Kentucky Blue or June Grass. *Poa pratensis.* 2½ ft. high; ear 5 in. long; stems round, earlets ¼ in. long, crowded on end-half of branches, almost sessile. Much cultivated.


4

4. Roughish Meadow Grass. *Poa trivialis.* 2 ft. high; ear 5 in. long, earlet ⅛ in. long, stemmed and less crowded on three-quarters of end of branches. In moist meadows.


5

5. Grove Meadow Grass. *Poa alsodes.* 1½ ft. high; ear 5 in. long, slender, open, earlets scattered, mostly long-stemmed, ¼ in. long. In shady woods.


6

6. False Red Top or Fowl Meadow Grass. *Poa flava.* 3½ ft. high; ear 9 in. long, earlets 3-16 in. long on underside of branches, all short-stalked. In moist meadows.

This and No. 5 resembles *Agrostis alba*, but has several-flowered earlets.


7

7. Spreading Meadow Grass. *Puccinella distans.* 1½ ft. high; ear 4½ in long, earlets crowded on upper half of branches; leaves short and narrow. On salt marshes.


8

8. Bloom Covered Spear Grass. *Poa glauca.* 1½ ft. high; ear 2 in. long, branches upright, rough, with single earlets at their ends, one-sided. White Mountains.

9. Mountain Spear Grass. *Poa laxa.* 1 ft. high; ear 2 in. long. Like the last, but branches smooth. White Mountains and northward.


9

10. Northern Spear Grass. *Poa nemoralis.* 1½ ft. high; ear 3½ in long. Like Weak Spear Grass, but branches shorter, beset with earlets more than half their length. Mountains northward.


10

Nos. 8 and 9 resemble 1, but earlets upright, ears one-sided.

PLATE XX



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Continued from page 44.



11. WEAK SPEAR GRASS. *Poa debilis.* 1½ ft. high; ears 4 in. long. Like last, but branches upright, one-sided, nodding, beset with earlets less than half their length, and leaves longer. In woods.



12. NODDING FESCUE GRASS. *Festuca nutans.* 2½ ft. high; ear 6 in. long, very slender and open, earlets far apart; leaves long, dark green. In rocky woods.

Nos. 10, 11, 12, resemble Elongated Manna, pl. XIII., fig. 10, but more slender and with less spikelets.



1. QUAKE GRASS. *Briza media.* 1½ ft. high; ear 3 in. long, earlets round, heart-shaped, flat, drooping, branches in pairs. In fields and meadows.



2. RATTLESNAKE GRASS. *Panicularia canadensis.* 2½ ft. high; ear 8 in. long, earlets ¼ to ½ in. long, flat, oblong, drooping, branches in threes or more. In swamps.



3. NORTHERN MANNA GRASS. *Panicularia laxa.* 3 ft. high; ear 8 in. long, earlets ⅛ in. long, upright or spreading, branches in pairs. In wet soil.



4. NERVED MANNA GRASS. *Panicularia nervata.* 2 ft. high; ear 5 in. long, branches spreading and drooping, earlets ⅛ in. long, first pair and flowering scales ribbed and rounded. In marshes.



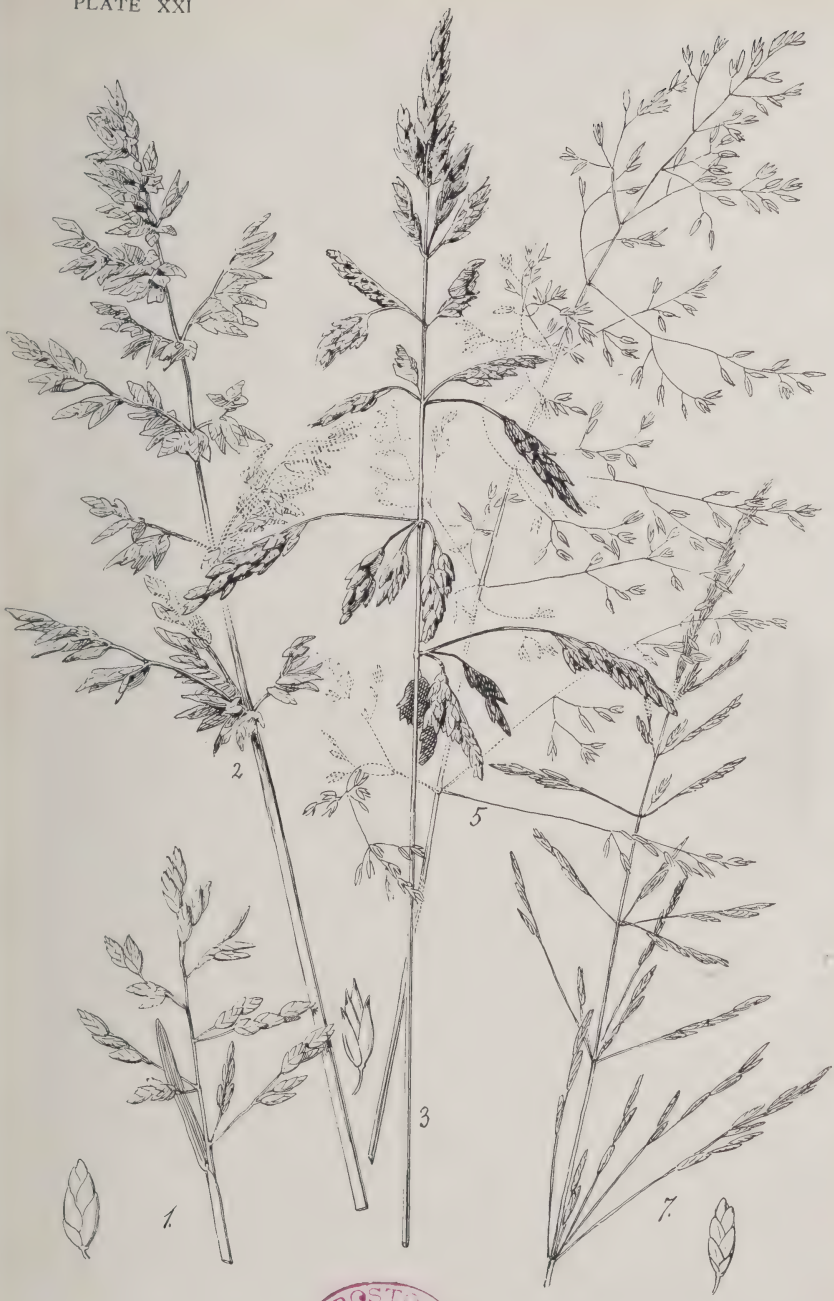
5. PALE MANNA GRASS. *Panicularia pallida.* 2 ft. high, pale green; ear 4 in. long, earlet ¼ in. long. Similar to Nerved Manna Grass, except less drooping, narrower leaves and blunt scales.



6. REED MEADOW GRASS. *Panicularia americana.* 4 ft. high; ear 1 ft. long, stout, upright, earlets ¼ in. long, first pair of scales pointed, the others strongly ribbed; leaves wide and long. In wet ground.



PLATE XXI



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1. Slender Wood Reed Grass. *Cinna latifolia.* 3 ft. high; ear 7½ in. long, drooping, open. The two outer scales of the spikelet of nearly the same size. In damp woods.



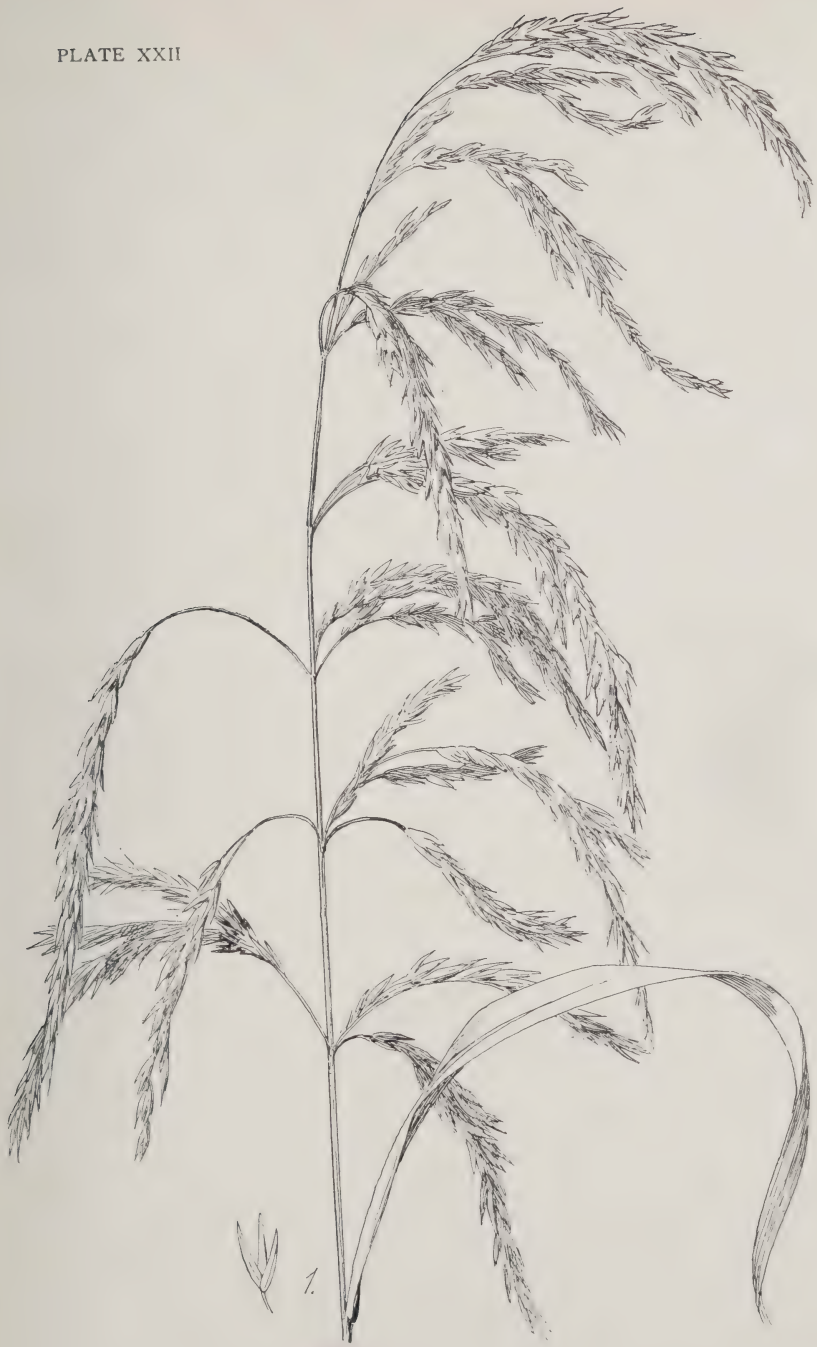
2. Wood Reed Grass. *Cinna arundinacea.* 3½ ft. high; ear 9 in. long, stout, drooping, spreading in flowering time, sometimes bushy. The two outer scales of the spikelet of unequal size. In wet woodlands.

There are yet to mention with no North American relations:

Corn. *Zea Mays.* 10 ft. high, with several fertile ears in the axils of the lower leaves and a sterile ear on the top of the stem; stems solid. Originally from Asia. Cultivated.

Pampas Grass. *Gynerium argenteum.* 10 ft. high, from a large tuft of long, curved leaves; ear large, silvery-silky, fertile and sterile flowers on separate plants. Cultivated in gardens.

PLATE XXII



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KEY TO THE SEDGE FAMILY. *Cyperaceæ.*

Spikes or spikelets all of one kind of flowers; all perfect.

Many-flowered flat spikelets, flowers in two rows. - - CYPERUS. DULICHIUM
rounded spikelets, flowers in several rows all around stem,
no leaves, one spikelet at end of stem. - ELEOCHARIS. SCIRPUS
leafy, one or several spikelets in sessile clusters.
SCIRPUS. PSILOCARYA. FUIRENA. HEMICARPHA
clustered spikelets on umbrella-like spreading stemlets;
plant tall. - - - - - - - - SCIRPUS
single spikelets on umbrella-like spreading stemlets; plant
small. - - - - - STENOPHYLLUS. FIMBRISTYLIS
Numerous few-flowered spikelets in head-like clusters at end of stem:
with long, silky hair. - - - - - - ERIOPHORUM
no silky hairs; often several clusters, distant, on stem.
RYNCHOSPORA. CLADIUM

Spikes of two kinds of flowers on the same or separate spikes.

Upper spikes not fertile, lower spikes fertile, or upper part of the same spike
sterile and lower part fertile; also upper part fertile and
lower part sterile:
Fruits naked - - - - - - - - SCLERIA
Fruits enclosed in a pouch or bag - - - - CAREX



SEDGE FAMILY: *Cyperaceæ.*

I. GALINGALE. *Cyperus.*

1. Low Cyperus. *Cyperus diandrus.* 6 in. high; spikelets pale green with purplish edges, or purplish, very flat and thin; seed gray. In low grounds.

2. Shining Cyperus. *Cyperus rivularis* or *castaneus.* 7 in. high; spikelets brown and more firm, otherwise like *C. diandrus*; seed brown. Edges of streams and ponds.

3. Yellow Cyperus. *Cyperus flavescens.* 7 in. high; spikelets straw yellow, narrow; seed black; otherwise like *C. diandrus.* Low grounds.

4. Nuttall's Cyperus. *Cyperus nuttallii.* 10 in. high; spikelets over 1 in. long, loosely clustered, yellowish brown. In brackish marshes.

5. Brown Cyperus. *Cyperus fuscus.* 1 ft. high; spikelets brown with a green keel, less than ½ in. long. Near shore.

6. Toothed Cyperus. *Cyperus dentatus.* 14 in. high; spikelets reddish brown, ¾ in. long. Sandy swamps.

7. Slender Cyperus. *Cyperus filiculmis.* 1 ft. high; spikelets in close, round heads, green; stems wire-like. In dry fields.

8. Awned Cyperus. *Cyperus inflexus.* 4 in. high; spikelets light brown in single heads, awned; stems hair-like. On sandy shores.

9. Houghton's Cyperus. *Cyperus houghtoni.* 1½ ft. high; spikelets chestnut brown, with several stemmed heads; otherwise like *C. filiculmis.* In sandy soil.

10. Gray's Cyperus. *Cyperus grayi.* 9 in. high; spikelets greenish-chestnut colored, loose in many long stemmed heads; leaves bristle-shaped, stems thread-like. On barren sands.

11. Yellow Nut Grass. *Cyperus esculentus.* 1½ ft. high; stems stout; spikelets numerous, growing from the

sides of their stems, flat; spikes and leaves yellowish green; roots with small tubers; seed narrow, oblong, blunt. In wet fields on brooks.

12. Red rooted Nut Grass. *Cyperus erythrorhizos.* 2 ft. high, more or less; spikelets bright chestnut; otherwise like *C. esculentus;* seed egg-shaped. On edge of rivers.



13. Straw colored Cyperus. *Cyperus strigosus.* 2 ft. high; spikelets straw-colored, flat, from ¼ to 1 in. long; seed narrow, oblong, pointed. Very variable; grows from bulbs. In wet grounds and fields.



14. Michaux's Cyperus. *Cyperus speciosus.* 1½ ft. high; spikelets very narrow, roundish, dull brown. In marshes.



15. Engelmann's Cyperus. *Cyperus engelmanni.* 2 ft. high; spikelets very narrow and round, greenish-brown. In wet soil.



16. Dulichium. *Dulichium arundinaceum.* 2 ft. high; leaves in three regular rows along the whole length of the round stem; in their axils grows the stemlet with the roundish spikelets. On ponds and in swamps.

Note:—Very similar to each other in the appearance of the ear are Nos. 1 to 6, 7 to 10, and 11 to 15.

II. SPIKE RUSH. *Eleocharis.*



1. Knotted Spike-Rush. *Eleocharis interstincta.* 2½ ft. high; spikes many-flowered, not wider than stem; stem knotted or jointed. In water.



2. Robbins' Spike-Rush. *Eleocharis robbinsii.* 1½ ft. long; spikes not wider than stem, few-flowered; stems not jointed, with hairlike branches at the bottom. In shallow water.

PLATE XXIII



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Spikes wider than stem.



3. Creeping Spike-Rush. *Eleocharis palustris.* 3 ft. high; spike lance-shaped with rounded point; stem stout. In ponds and marshes.

4. Beaked Spike-Rush. *Eleocharis rostellata.* 3 ft. high; spike lance-shaped, pointed; stem slender, wiry. In marsh and wet meadows.

5. Large tubercled Spike-Rush. *Eleocharis tuberculosa.* 16 in. high; spike egg-shaped; stem slender, but stiff. In wet soil.

6. Flat-stemmed Spike-Rush. *Eleocharis acuminata.* 16 in. high; spike roundish, egg-shaped; stem flat. In wet soil.

7. Black-fruited Spike-Rush. *Eleocharis melanocarpa.* 15 in. high; spike oblong, blunt; stem flat. In wet sandy soil.

8. Slender Spike-Rush. *Eleocharis tenuis.* 12 in. high; spike narrow, oblong; stems hairlike, 4-angled. In wet soil.

9. Egg-shaped Spike-Rush. *Eleocharis ovata.* 9 in. high; spike egg-shaped, rounded; stem thread-like. In wet grounds.

10. Engelmann's Spike-Rush. *Eleocharis engelmanni.* 9 in. high; spike lance-shaped, pointed; stem thread-like. Wet soil.

11. Matted Spike-Rush. *Eleocharis intermedia.* 8 in. high; spike oblong, egg-shaped, small; stem hair-like. In marshes.

12. Needle Spike-Rush. *Eleocharis acicularis.* 5 in. high; spike narrow, egg-shaped; stem finely, hairlike. In wet soil.

13. Bright Green Spike-Rush. *Eleocharis olivacea.* 2½ in. high; spike egg-shaped, brown; stems slender, bright green. In wet soil.

Note: — All this group and Nos. 1 to 5 of the next group, *Scirpus*, are very similar in the appearance of the ear.

PLATE XXIV



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III. BULRUSH. *Scirpus.*

Spikes single at end of stem.



1. Dwarf Club-Rush. *Scirpus nanus.* 1½ in. high; stem hair-like, flattened, no leaves; spike oblong, egg-shaped, and pale green; otherwise like *Eleocharis olivacea.* In mud on salt marshes.



2. Few flowered Club-Rush. *Scirpus pauciflorus.* 6 in. high; stem slender, triangular, leafless; scales pointed, bristly; otherwise like an *Eleocharis.* In wet grounds.



3. Clinton's Club-Rush. *Scirpus clintoni.* 10 in. high; resembles an *Eleocharis* with one narrow leaf and a short bract under the spike; stem slender, triangular. In dry fields.



4. Wood Club-Rush. *Scirpus planifolius.* 12 in. high; like *S. clintoni,* but scales sharp-pointed. In woods.



5. Water Club-Rush. *Scirpus subterminalis.* 2½ ft. long; stem knotted; leaf 12 in. long; spike oblong, with a longer bract; otherwise like *S. clintoni.* In ponds.

Several sessile, clustered spikes.

One long subtending leaf.



6. Hall's Club-Rush. *Scirpus hallii.* 9 in. high; stem blunt-triangular; spikelets one or two, clustered, sessile, oblong, cylindrical; one hairlike leaf. In wet soil.



7. Weak-stalked Club-Rush. *Scirpus debilis.* 1¼ ft. high; stem round; spikelets in threes or more, egg-shaped, scales egg-shaped; rarely with one short leaf. In wet soil.



8. Smith's Club-Rush. *Scirpus smithii.* 8 in. high; stems round, very slender; spikelets in threes or more, scales reversed egg-shaped; rarely with one short leaf. In wet places.



9. Three-Square Chairmakers Rush. *Scirpus americanus.* 2½ ft. high; stem sharp-triangular, two sides concave, one flat; spikelets oblong, egg-shaped, several scales with awns. In fresh and brackish swamps.



10. Olney's Bulrush. *Scirpus olneyi.* 4 ft. high; stem sharply-triangular, sides concave; spikelets oblong egg-shaped, many scales with very short awn. Salt marshes.



11. Torrey's Bulrush. *Scirpus torreyi.* 3 ft. high; stem sharply-triangular; spikelets oblong, few scales, long egg-shaped. In swamps.



12. Salt Marsh Bulrush. *Scirpus robustus.* 3½ ft. high; stem sharply-triangular, sides flat; spikelets oblong, egg-shaped, many in the often compound cluster, scales egg-shaped with an awn. In salt marshes.

13. Spreading Fuirena. *Fuirena squarrosa.* 12 in. high; stem tufted; spikelets ½ in. long in clusters of threes or more, scales with long awns. In wet meadows.



14. Hemicarpha. *Hemicarpha micrantha.* 3 ft. high; stems flattened, in tufts; spikelets ⅛ in. long, egg-shaped on sides of stems. In moist sandy soil.

Clusters stemmed.

15. Wool Grass. *Scirpus cyperinus.* 4 ft. high; stem slightly triangular, almost round; spikelets ¼ in. long, on second branches, oblong egg-shaped mostly in threes or fives, very woolly. In wet grounds.

16. Leafy Bulrush. *Scirpus polyphyllus.* 3 ft. high; stem sharply-triangular; spikelets ⅛ in. long, egg-shaped, mostly in threes on second branches. In wet woods.

17. Small-fruited Bulrush. *Scirpus microcarpus.* 4 ft. high; stem stout; spikelets less than ¼ in. long, oblong egg-shaped, on second branches in threes or fives. In wet grounds.

18. Dark green Bulrush. *Scirpus atrovirens.* 3 ft. high; stem triangular, slender; spikelets oblong, six or more in each cluster on first or short second branches. In swamps.

19. Wood Bulrush. *Scirpus sylvaticus.* 5 ft. high; stem triangular, stout; spikelets ¼ in. long, on second branches in threes, oblong. In swamps.

20. River Bulrush. *Scirpus fluviatilis.* 4 ½ ft. high; stem sharply-triangular, with flat sides; spikelets ¾ in. long, oblong, cylindrical, on first branches; scales with an awn.

21. Great Bulrush, Mat-Rush. *Scirpus lacustris.* 6 ft. high; stem stout, sometimes 1 in. thick, round; spikelets ¼ in. long, single or in threes or fours in clusters on the second branches, long, egg-shaped, pointed; scales reversed egg shaped.

Note: — Nos. 6 to 14 and 15 to 21 are very similar in the appearance of the ear.

IV. *Stenophyllus.*



1. Hairlike Stenophyllus. *Stenophyllus capillaris.* 6 in. high; stems and leaves hairlike; spikelets slightly 4-angled, few at end of stem; seed triangular. In moist or dry soil, in tufts.



2. Slender Fimbristylis. *Fimbristylis autumnalis.* 9 in. high, in tufts; stem flattened; leaves narrow, but flat; spikelets with strongly pointed scales, numerous at end of stem; seed triangular. In wet grounds.



3. Vahl's Fimbristylis. *Fimbristylis vahlii.* 3 in. high; spikelets stemless, clustered on end of stem; leaves very long; seed long egg-shaped, slightly rounded. Near wharves.



4. Long-beaked Bald-Rush. *Psilocarya scirpoides.* 9 in. high; seed round and flattened like a lense; otherwise like *F. autumnalis*.

Note: — All of above similar in the appearance of the ear.

V. COTTON GRASS. *Eriophorum.*



1. Virginia Cotton Grass. *Eriophorum virginicum.* 3 ft. high; with white or brownish heads; stem leafy. In bogs.

2. Slender Cotton Grass. *Eriophorum gracile.* 1½ ft. high; stems slender, leafy, with several white heads on long slender stemlets, drooping. In swamps.

3. Tall Cotton Grass. *Eriophorum polystachyon.* 2½ ft. high; stem stiff, leafy, heads numerous; otherwise like the last.

4. Sheathed Cotton Grass. *Eriophorum vaginatum.* 1 ft. high; with single heads; two sheaths, but no leaves.

5. Mountain Cotton Grass. *Eriophorum alpinum.* 8 in. high; heads single, small, with few white hairs; leaves ¾ in. long. In the mountains.

Note: — All of above similar in the appearance of the ear.

PLATE XXV



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VI. BEAKED-RUSH. *Rynchospora.*



1. Clustered Beaked-Rush. *Rynchospora glomerata.* 2 ft. high; spikelets purplish brown, in distant short-stemmed clusters on upper half of the stem. In moist grounds.



2. Brown Beaked-Rush. *Rynchospora fusca.* 1 ft. high; two or three clusters on the end of stem, the lower long-stemmed, brown. In bogs.



3. Hairlike Beaked-Rush. *Rynchospora capillacea.* 1 ft. high; stem and leaves hairlike, with few loose chestnut brown spikelets on end of stems. In bogs.



4. White Beaked-Rush. *Rynchospora alba.* 1 ft. high; spikelets white, one or two clusters on end of stem. In bogs.

VII. *Cladium.*



1. Twig-Rush. *Cladium mariscoides.* 2½ ft. high, with a few long-stemmed, small, loose clusters on end of stem or from axils of leaves. In marshes.

VIII. NUT-RUSH. *Scleria.*



1. Net-like Ribbed Nut-Rush. *Scleria reticularis.* 1¾ ft. high; stem slender, upright, 3-angled; spikelets few in loose clusters on end of stem and axils of leaves; seed globular, white, ribbed. In meadows.



2. Thimble-like Nut-Rush. *Scleria pauciflora.* 1½ ft. high; stem 3-angled; spikelets very few; seed thimble-shaped, white, with little warts like dots, which are longer at lower end. In dry soil.



3. Low Nut-Rush. *Scleria verticillata.* 14 in. high; stem hairlike, 3-angled; spikelets in threes or fours, distant, small clusters at the upper part of stem; seed globular, white, with horizontal elevated lines. In moist meadows.

Note: — All of the *Rynchospora*, *Cladium* and *Scleria* are similar to each other in the appearance of the ear.

KEY TO THE SEDGES PROPER. *Carex.*

Two kinds of spikes on same plant; upper spike or spikes narrow, sterile, lower spikes fertile; or, sometimes, upper spike partly fertile. Seed 3-angled, thick.

Seed pouch with a **long beak**:

Seed pouch ½ in. or more in length:

fertile spike loose-flowered, - - - - Nos. 1, 2, 3
globular, - - - - - - 4, 5
oblong cylindrical, - - - - - 6, 7

Seed pouch between ½ and ¼ in. in length:

fertile spike oblong cylindrical, - - - - - 8 to 17
few-flowered - - - - - - 18

Seed pouch between ¼ and ⅛ in. in length:

fertile spike globular oblong, - - - - - 19 to 22
oblong, - - - - - - 23 to 29
cylindrical, - - - - - - 30 to 36

Seed pouch ⅛ in. or less in length:

fertile spike cylindrical, - - - - - - 37 to 40
oblong globular, - - - - - 41 to 47

Seed pouch with **no beak**, or a very short one;

fertile spike 1 in. or more in length,
¼ in. or more thick, - - - - 48 to 51
¼ in. or less thick, - - - - 52 to 57

fertile spike more than ½ in. and less than 1 in. in length,
¼ in. or more thick, - - - - 58 to 61
between ¼ and ⅛ in. thick - - - 62 to 75
⅛ in. thick or less, - - - - 76 to 78

fertile spike less than ½ in. in length, - - - 79 to 83

Plants with one kind of spikes, the fertile and sterile flowers separate. They may be either all fertile at the base and sterile at the top, or sterile at the base and fertile at the top on the same spike; or sometimes sterile and fertile flowers mixed. Seed lentil-shaped, flat.

Spike sterile at the top and fertile below

of few-flowered, single head-like clusters, - - - 84 to 87
yellowish or brownish, aggregated on end of stem, - 88 to 93
yellowish, simple clusters more or less interrupted, - 94 to 100

Spike fertile at the top and sterile below

seed pouch wingless, - - - - - - 101 to 107
seed pouch with wing-like edge, - - - - 108 to 118

IX. SEDGE. *Carex.*



1. Long Sedge. *Carex folliculata.* 2½ ft. long; yellowish green, stem upright or reclining; two to four fertile spikes 1¼ in. long, loose, roundish egg-shaped, far apart, the lower long-stalked, nodding. In swamps.



2. Yellowish Sedge. *Carex abacta.* 1½ ft. high; stems upright and spikes close together; leaves narrow. In bogs.

3. Collins' Sedge. *Carex collinsii.* 1¼ ft. high; slender, with few flowers in each spike; leaves very narrow. In bogs.



4. Bladder Sedge. *Carex intumescens.* 2½ ft. high; stem upright or somewhat reclining, with mostly two round fertile spikes 1 in. in diameter; pouches strongly spreading, green. In wet pastures and swamps.

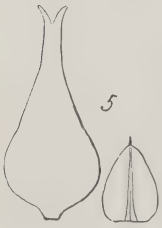
5. Gray's Sedge. *Carex asa grayi.* 2½ ft. high; dark green, stout; one or two spikes; leaves wider ¼ in. or more; otherwise like No. 4.



6. Hop Sedge. *Carex lupulina.* 3 ft. high; stout and leafy, upright or reclining; spikes two to four, oblong, 2 in. long, densely flowered, short-stalked. In wet grounds.

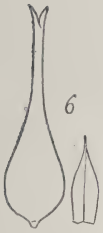
7. Hop-like Sedge. *Carex lupuliformis.* 2½ ft. high; spike 2½ in. long; differs from No. 6 in the seed, which is longer than wide in *lupulina*, and about as wide as long in *lupuliformis*. Both similar to fig. 8, but ears erect.

8. Button Sedge. *Carex bullata.* 1¾ ft. high; stems slender, sharp and rough-angled; spikes, mostly two, light green or straw colored, oblong, 1¼ in. long, 3-8 in. thick, shining; pouches spreading. In swamps.



9. Tuckerman's Sedge. *Carex tuckermani.* 3 ft. high; stems very slender; spikes two or three, 1½ in. long, ½ in. thick, oblong; otherwise like No. 8. In bogs and meadows.

10. Retrorse Sedge. *Carex retrorsa.* 2 ft. high; stems roundish-angled and smooth; spikes three to five, 1½ in. long, ½ in. thick, oblong, three or four in a bunch at the top of the stem; otherwise like No. 8.



11. Sallow Sedge. *Carex lurida.* 2¼ ft. high; stems roundish-angled, upright, slender; spikes yellowish green, one to four, oblong, 1½ in. long, ½ in. thick, densely many-flowered.

12. Bailey's Sedge. *Carex baileyi.* 1½ ft. high; stem slender, upright or reclining; spikes one to three, long, oblong, densely flowered, 1½ in. long, 3-8 in. thick. In bogs.



13. Porcupine Sedge. *Carex hystricina.* 1½ ft. high; stem slender, sharp-angled; spikes one to four, long, oblong, 1½ in. long, 3-8 in. thick, somewhat nodding. In low meadows.

14. Schweinitz's Sedge. *Carex Schweinitzii.* 1¾ ft. long; yellowish green; spikes 2½ in. long, 3-8 in. thick, long, oblong, cylindric. In swamps.

15. Hairy-fruited Sedge. *Carex trichocarpa.* 2½ ft. high; stem sharp-angled; spikes two to five, scattered, 2½ in. long, ½ in. thick.



16. River-bank Sedge. *Carex riparia.* 3 ft. high; leaves broad and flat; spikes two to four, scattered, 3 in. long and 3-8 in. thick, varying to very short, the lower one drooping. In swales.



17. Rough Sedge. *Carex scabrata.* 2 ft. high; leaves broad, flat and very rough; spikes three to five, 1½ in. long, ¼ in. thick, upright, the lower drooping. In moist woods.



18. Few Flowered Sedge. *Carex pauciflora.* 1 ft. high; leaves very narrow, stems slender, upright; spike of only three or four downward pointed seed pouches below the upright sterile spike. In bogs.

Seed-pouch between ¼ in. to ⅛ in. long—
fertile spike globular, oblong.



19. Few-seeded Sedge. *Carex oligosperma.* 2 ft. high; stem very slender; leaves very narrow; one or two spikes, ¾ in. long. One sterile spike stalked, fertile spikes distant. In bogs.



20. Hairy Sedge. *Carex hirta.* 1¼ ft. high; stem slender, upright; two or three spikes, 1 in. long, ¼ in. thick, loose-flowered; lower leaves hairy; two or three sterile spikes stalked, fertile spikes distant. In fields and waste grounds.





21. Yellow Sedge. *Carex flava.* 1½ ft. high; yellow-green; stem erect, very slender; one to four spikes, 3-8 in. long, ¼ in. thick; one sterile, sessile spike; fertile spikes close together. Swamps and wet meadows.



22. Velvet Sedge. *Carex vestita.* 2 ft. high; stems slender, erect or reclining; one to five fertile spikes, ¾ in. long, 3-8 in. thick; one sterile spike; seed pouch covered with hairs; spikes near together. In sandy woods.

Fertile spikes, oblong.



23. Cat-tail Sedge. *Carex typhinoides.* 2½ ft. long; dark green; stems slender; leaves very broad; from two to five spikes, 1½ in. long, ½ in. thick, sterile flowers at the top and along the long stalk of the spikes. In swamps.



24. Handsome Sedge. *Carex formosa.* 1¾ ft. high; stem erect; the upper one sterile at its base; from three to five spikes; 1 in. long, ¼ in. thick, long stalked, drooping, scale with short, rough awn. In dry woods.



25. Chestnut Sedge. *Carex castanea.* 2 ft. high; stem hairlike, somewhat reclining; one sterile spike, and from one to four fertile spikes, ¾ in. long and ¼ in. thick, long stalked and drooping; leaves hairy. In dry woods.



26. Woolly Sedge. *Carex lanuginosa.* 2½ ft. long; stem slender, sharp angled; from one to three spikes, 1 in. long and ¼ in. thick; pouch similar to No. 27, but wider. In swamps.



27. Slender Sedge. *Carex filiformis.* 2½ ft. long; stems very slender, reclining; from one to three spikes, 1 in. long and ¼ in. thick, far apart; seed pouch hairy. In wet meadows.



28. Variable Sedge. *Carex polymorpha.* 1½ ft. high; dark green; stems stiff and erect; from one to two spikes, 1¼ in. long, 3-8 in. thick, short stalked. In swamps and meadows.



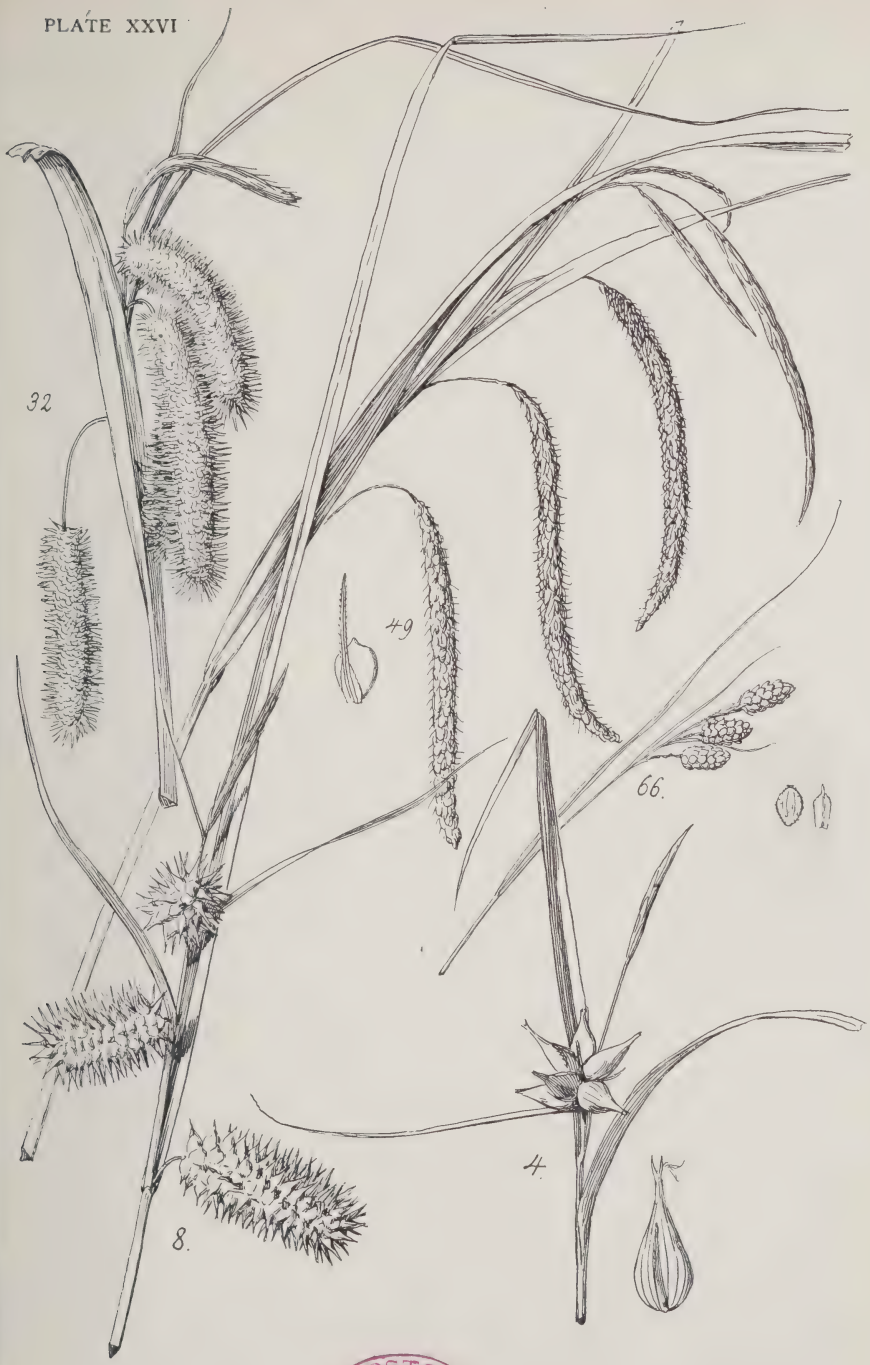
29. Hairy Sedge. *Carex pubescens.* 1½ ft. long; bright green; stem slender, reclining; sterile spike, sessile; from two to four fertile spikes, ¾ in. long, ¼ in. thick, loose-flowered; leaves and pouch hairy. In woods.



30. Bottle Sedge. *Carex utriculata.* 3 ft. high; stem stout, erect; from three to four spikes, 3 to 4 in. long, densely flowered, erect. In marshes.



PLATE XXVI



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31. Necklace Sedge. *Carex monile.* 2½ ft. long; stem slender, reclining; from one to three spikes, 2½ in. long, ¼ in. thick, loosely flowered, spreading. In wet meadows.



32. Bristly Sedge. *Carex comosa.* 2½ ft. high; stem stout; from three to five spikes, 1¾ in. long and ½ in. thick, stalked, drooping, bristly densely flowered; sterile spike, sometimes fertile at the top. In swamps and ponds.



33. Davis' Sedge. *Carex davisii.* 2 ft. high; soft hairy; from three to four spikes, 1 in. long and ¼ in. thick, hairlike-stalked, drooping; sterile spike, fertile at the top. In damp woods.





34. Long-beaked Sedge. *Carex longirostris.* 2 ft. high; light green; from two to four spikes, 1¼ in. long and ¼ in. thick, loosely flowered, hairlike, long-stalked, drooping. On river banks.



35. Drooping Wood Sedge. *Carex arctata.* 1¾ ft. long; stem slender, reclining; from two to four spikes, 1½ in. long and ⅛ in. thick, loose-flowered.



36. Slender Stalked Sedge. *Carex tenuis.* 1½ ft. long; stem very slender, reclining; from two to four spikes, 2 in. long and ¼ in. thick, very loose-flowered, drooping; sterile spike, sometimes fertile at the top. In woods.



Seed pouch ⅛ in. long or less.—Spikes cylindrical.

37. Swamp Sedge. *Carex acutiformis.* 2½ ft. high; stem stout, sharp-angled, pale green; from one to three spikes, 2½ in. long and 3-16 in. thick, drooping or spreading; leaves broad and long. In wet meadows.



38. Twisted Sedge. *Carex torta.* 2¼ ft. high; stem slender, erect or reclining, light green; from three to five spikes, 2 in. long and ⅛ in. thick; beak of seed pouch twisted. In shady woods and marshes.



39. Drooping Sedge. *Carex prasina.* 1¾ ft. high; stem slender, reclining, sharp, three-angled; from two to three spikes, 2 in. long and ⅛ in. thick; loose-flowered. In meadows and moist woods.



40. Loose-flowered Sedge. *Carex laxiflora.* 1¼ ft. high; pale green, stem reclining; from two to four spikes, ¾ in. long and ⅛ in. thick; very loose and scattered and beset with flowers, drooping. In meadows.





Spikes oblong, globular.



41. Few-fruited Sedge. *Carex oligocarpa.* 14 in. high; stem hairlike, reclining, very slender; from two to four spikes, far apart, ½ in. long and ⅛ in. thick, upright; few-flowered. In dry woods and thickets.



42. Green Sedge. *Carex viridula.* 10 in. high; bright green; stems slender, upright; from two to four spikes, ¼ in. long and ⅛ in. thick. In bogs and damp rocks.



43. Fibrous-rooted Sedge. *Carex pedicellata.* 1 ft. high; stems slender, reclining; from two to four spikes, very short, about ⅛ in. in diameter; pouch hairy. In dry grounds.



44. Pennsylvania Sedge. *Carex pennsylvanica.* 1 ft. high; dark green, slender, upright; sterile spike, ¾ in. long and stout; fertile spikes, one to three, small, ⅛ in. in diameter.



45. New England Sedge. *Carex novæ angliæ.* 7 in. high; dark green, erect or reclining; sterile spike very narrow, fertile spikes two to four, small, globular, few-flowered, with hairlike bracts double the length of spike. Damp woods.







46. Umbel-like Sedge. *Carex umbellata.* 2 in. high; leaves often 1 ft. long; grows in dense mats; stem with a bunch of several stemlets, each bearing from one to three very small spikes.



47. Back's Sedge. *Carex durifolia.* 1 in. high; forming dense mats, stems sometimes hairlike and long; spikes of about three sterile and three fertile flowers, supported by a broad leaf-like bract. In woods.



Spike 1 inch or more long.



48. Seaside Sedge. *Carex maritima.* 1¾ ft. high; stem stout or slender, light green; from two to four spikes 2 in. long and ½ in. thick, often sterile at the top, drooping. In salt meadows.



49. Fringed Sedge. *Carex crinita.* 3½ ft. high; stem stout, 3-angled, erect or recurving; spikes three or five, 8 in. long and 3-8 in. thick, densely flowered, drooping. In wood swamps.

50. Nodding Sedge. *Carex gynandra.* 3 ft. high;



stem stout; from three to five spikes 3 in. long and very narrow, drooping, resembling a *crinita.* In swamps.

51. Wood's Sedge. *Carex tetanica.* 1½ ft. high; light green; stem slender, erect; two or three spikes, 1 in. long, very slender, loose-flowered and drooping. In meadows.

52. Tussock Sedge, Meadow Grass. *Carex stricta.* 3 ft. high. In dense clumps: from two to four spikes 1½ in. long and ⅛ in. thick, narrow, cylindrical. In meadow swamps.

53. Water Sedge. *Carex aquatilis.* 3 ft. high; pale green, stout, sharp, 3-angled; from two to four spikes, 2 in. long and ¼ in. thick, upright. In swamps along stream.

54. Awn-pointed Sedge. *Carex cuspidata.* 2 ft. high; stem stout, erect; two to four spikes, 2 in. long and ⅛ in. thick, upright. In marshes near the coast.

55. Ribbed Sedge. *Carex costellata.* 2 ft. long; stem slender, spreading; leaves hairy; two to four spikes, 1 in. long and ⅛ in. thick, narrow, cylindrical, spreading; sterile spike, fertile at the top. In woods.

56. Graceful Sedge. *Carex gracillima.* 2 ft. long; stem slender, spreading; three to five spikes, 2 in. long and ⅛ in. thick, narrow, cylindrical, drooping. In wet woods and meadows.

57. Summer Sedge. *Carex æstivalis.* 1½ ft. high; stem hairlike, slender; three to five spikes, 1½ in. long and ⅛ in. thick, spreading; end spike sterile at top and bottom. Mountain woods.

Fertile spikes ¼ in. or more thick, ½ to 1 in. long.

58. Brown Sedge. *Carex fusca.* 2 ft. high; stem slender, 3-angled; two to four spikes, erect, sessile or very short stalked, ⅜ in. long, the upper spike sterile at the lower end. In bogs.

59. Mud Sedge. *Carex limosa.* 1½ ft. high; stem slender, erect, light green; one or two hairlike-stalked drooping spikes, ¾ in. long and ¼ in. thick, one erect sterile spike. In bogs.

60. Magellan Sedge. *Carex magellanica.* 1¼ ft. high; stem slender, reclining, one to three long-stalked drooping roundish spikes, ½ in. long and ¼ in. thick; one sterile spike. In bogs.

61. Hirsute Sedge. *Carex triceps.* 2 ft. high; light

green, stem slender, reclining; twe to five spikes ½ in. long and ¼ in. thick, clustered at end of stem, the upper one sterile at the lower part.

Between ¼ and ⅛ of an inch thick.

62. Hayden's Sedge. *Carex haydeni.* 1½ ft. high; stem slender, 3-angled; two to four spikes, ¾ in. long, sessile, cylindrical. In swamps and meadows.

63. Goodenough's Sedge. *Carex goodenovii.* 1 ½ ft. high; stem stiff, erect, sharp-angled; one sterile and two to three fertile spikes, sessile, narrow, cylindrical. In wet grounds.



64. Gray Sedge. *Carex grisea.* 1¾ ft. long; stem stout, erect, spreading, light green; one sterile and three to five fertile spikes, the upper ones close together, sessile, the lower long-stalked and distant, oblong. In woods.



65. Bloomed Sedge. *Carex glaucodea.* 1 ft. long; stem stout, spreading, pale, with bloom; one sterile and three to five fertile spikes, oblong, the lower stalked and distant, the upper sessile. In fields.



66. Downy Green Sedge. *Carex virescens.* 1 ft. high; stem very slender, erect or reclining; two to five spikes, oblong, ¾ in. long, the upper ones sterile on lower part, pouch hairy. In dry woods.



67. Meadow Sedge. *Carex granularis.* 1½ ft. long; stem light green, slender, spreading; one sterile and three to five fertile spikes, the upper ones close, sessile, the lower ones distant, long-stalked.



68. Crawe's Sedge. *Carex crawei.* 9 in. high; stems stiff; several sterile and one to four fertile spikes, upper sessile, the lower distant and long-stalked. Moist meadows.



69. Pale Sedge. *Carex pallescens.* 1 ft. high, light green; stem slender, erect; one sterile and two to four fertile spikes, slender-stalked, oblong, clustered. In fields.



70. Field Sedge. *Carex conoidea.* 1 ft. high; stem slender, stiff, erect; one sterile and one to three fertile spikes, oblong, upper close, sessile, the lower distant, stalked. In meadows.



71. Hitchcock's Sedge. *Carex hitchcockiana.* 1 ft. high; stems slender, erect; one sterile and two to three fertile spikes, very loose and scattering flowered, upper part of sheath swollen. In woods.



72. White Bear Sedge. *Carex albursina.* 1½ ft.

high; stem stout; leaves 1 in. or more wide; two to four spikes, very loose-flowered, upper sessile, lower short-stalked. In woods.

73. Thicket Sedge. *Carex ptychocarpa.* 4 in. high; stem very slender, erect; lower leaves 3-8 in. wide and longer than the stem; spikes very few-flowered, loose and slender.

74. Carnation Grass, Grass-like Sedge. *Carex panicea.* 1½ ft. high, pale bluish, green; one or two sterile and two to three fertile spikes, loosely many-flowered, oblong, cylindrical, the lower ones stalked. In fields.

74. Livid Sedge. *Carex livida.* 1½ ft. high, pale green; stem slender, erect; one sterile and one to three fertile spikes, two close together at end of stem, sessile, erect. In bogs.



⅛ of an inch thick or less.

76. Slender Wood-Sedge. *Carex digitalis.* 1 ft. long; stem slender, thread-like; one sterile and two to three fertile spikes, slender-stalked and loosely flowered. In woods.

77. Plantain-leaved Sedge. *Carex plantaginea.* 1 ft. long, dark-green; leaves very broad; one sterile and three to four fertile spikes, loosely-flowered, bracts with swollen purplish sheaths.

78. Golden-fruited Sedge. *Carex aurea.* 8 in. long; stem reclining, slender; spikes few and loosely-flowered; seed pouch white when young, yellow when older. In wet meadows.

Spike less than ½ in. long.

79. Spreading Sedge. *Carex laxiculmis.* 1¼ in. long, blue green, with hairlike stems; lower leaves ½ in. wide; one sterile and two to four oblong globular fertile spikes, the upper one sessile, the other ones on very long hairlike stems, drooping. In woods.

80. Bristle-leaved Sedge. *Carex setifolia.* 10 in. long; stem thread-like, weak; leaves hairlike; one sterile and two to four fertile spikes ¼ in. long and less than ⅛ in. thick, stalked. In sandy soil.

81. Long-stalked Sedge. *Carex pedunculata.* 6 in. long, in dense mats, bright green; stem very slender; one sterile and several few-flowered spreading drooping spikes ¼ in. long.

PLATE XXVII



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82. Northern Sedge. *Carex deflexa.* 6 in. long; stem thread-like, bright green; one sterile and one to four fertile spikes ⅛ in. long. In mountains.

83. Vernal Sedge. *Carex præcox.* 7½ in. long, dark green; stem very slender; one large sterile and one to three fertile spikes ⅜ in. long, all clustered at end of stem.

Spikelet sterile at the top and fertile at the bottom.

84. Wildenow's Sedge. *Carex wildenovii.* 3 in. high, pale green; one to 5 spikes ½ in. long; leaves ⅛ in. wide and 1 ft. long. In dry woods.

85. Bristle-stalked Sedge. *Carex leptalea.* 1 ft. high, light green; one spike ½ in. long; stem and leaves thread-like. In swamps.

86. Coast Sedge. *Carex exilis.* 1½ ft. high; stem hairlike, slender, upright; one spike one inch long. In bogs near the coast.

87. Creeping Sedge. *Carex chordarhiza.* 1 ft. long; roots creeping; stems upright; two to four spikes 3-8 in. long; leaves short. In bogs and shallow water.

88. Awl-fruited Sedge. *Carex stipata.* 2¼ ft. high; spike three inches long, with numerous many-flowered spikelets; beak ¼ in. long; seed-pouch rough, long and flat. In swamps.

89. Panicled Sedge. *Carex teretiuscula.* 1¾ ft. long; spike 1½ in. long, with numerous oblong spikelets. In swamps and wet meadows.

90. Fox Sedge. *Carex vulpinoidea.* 2 ft. long; stem sharp-triangular; spike 3½ in. long, spikelets many, 3-8 in. long, oblong, each with a long, bristle-like bract. In swamps.

91. Yellow-fruited Sedge. *Carex xanthocarpa.* 3 ft. high; spike 1½ in. long; stem stout; spikelets oblong egg-shaped. In fields.

92. Bristly-spike Sedge. *Carex setacea.* 2¼ ft. high; spike 2 in. long; spikelets many, ¼ in. long, egg-shaped.

93. Soft-leaved Sedge. *Carex tenella.* 1 ft. high; stem hairlike, rough; spikelets very small and far apart. In bogs.

94. Star-shaped Sedge. *Carex rosea.* 1½ ft. high, bright green; four to eight spikes, round, ¼ in. in diameter. In woods.



95. Reflexed Sedge. *Carex retroflexa.* 1 ft. high; four to eight spikes, round, ¼ in. in diameter; stem and leaves hairlike, short. In thickets.

96. Lesser Prickly Sedge. *Carex muricata.* 1¾ ft. high; five to ten spikes, round, ¼ in. long; leaves narrow and long; stem upright or reclining. Meadows and fields.

97. Burr Reed-sedge. *Carex sparganioides.* 5½ ft. high; stem rough, sharp 3-angular, upright; leaves broad; six to twelve egg-shaped spikes. In woods.

98. Thin-leaved Sedge. *Carex cephaloidea.* 2½ ft. high; stem upright, slender; four to eight spikes, 1 in. long; bracts bristle-like, short; pouch 3-16 in. long. Fields.

99. Oval-leaved Sedge. *Carex cephalophora.* 1½ ft. long; spikes many, close together, ½ in. long. In dry fields.

100. Muhlenberg's Sedge. *Carex muhlenbergii.* 1¾ ft. high; stems light green, sharp, 3-angular, slender, upright; spike 1 in. long; bractlets longer than seed pouches, rough, bristle-like. In dry fields.

Spikelets fertile at the top and sterile at the bottom.

101. Little Prickly Sedge. *Carex sterilis.* 1 ft. high; three to five spikes, round, far apart, ¼ in. in diameter. In moist soil.

102. Eastern Sedge. *Carex atlantica.* 1¾ ft. high; four to seven spikes, round, distant, ¼ in. long. In swamps.

103. Inland Sedge. *Carex interior.* 1¾ ft. high; two to four spikes, round, distant, 3-16 in. long. In wet soil.

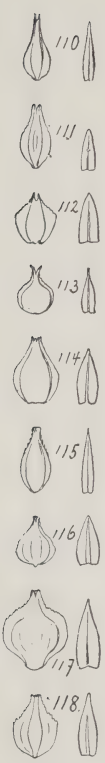
104. Silvery Sedge. *Carex canescens.* 1¾ ft. high, pale green; four to nine spikes; ¼ in. in diameter, distant. In swamps.

105. Dewey's Sedge. *Carex deweyana.* 1½ ft. high; three to six spikes, oblong, ¼ in. long; last leaf as long as spike. In dry woods.

106. Broome-like Sedge. *Carex bromoides.* 1½ ft. long; three to six spikes, ½ in. long, ⅛ in. thick; seed pouch ¼ in. long. In bogs.

107. Hillside Sedge. *Carex siccata.* 1½ ft. high; three to six spikes, ¼ in. long, short oblong. In dry fields.

108. Blunt Broom Sedge. *Carex tribuloides.* 1¾ ft. high; six to many spikes, ⅜ in. long and ¼ in. thick; pouch ¼ in. long. In meadows.



109. Pointed Broom Sedge. *Carex scoparia.* 1½ ft. long; three to nine spikes, oblong, pointed at both ends, ½ in. long and ¼ in. thick; pouches ¼ in. long. In moist soil.

110. Hare's-foot Sedge. *Carex leporina.* 1¼ ft. high; four to six spikes, ⅜ in. long and ¼ in. thick, close together; pouch 3-16 in. long.

111. Crested Sedge. *Carex cristatella.* 2 ft. high; six to many spikes, round egg-shaped, ¼ in. thick; pouch 3-16 in. long. In meadows.

112. Hay Sedge. *Carex fœnea.* 2¼ ft. high; four to many spikes, round egg-shaped, ¼ in. thick, far apart. In dry woods.

113. Straw Sedge. *Carex straminea.* 1¾ ft. high; three to six spikes, ¼ in. thick, round egg-shaped, distant. In dry fields.

114. Sea-beach Sedge. *Carex silicea.* 1¾ ft. high; five to eight spikes, ½ in. long and ¼ in. thick, pointed at both ends; pouch 3-16 in. long.

115. Marsh Straw Sedge. *Carex tenera.* 1½ ft. high; four to six spikes, round egg-shaped, ⅜ in. long, distant. In brackish marshes.

116. Fescue Sedge. *Carex festucacea.* 2½ ft. high; three to eight spikes, ¼ in. in diameter, close together. In dry or wet soil.

117. Broad-winged Sedge. *Carex alata.* 2¼ ft. high; spikes round egg-shaped, ½ in. long and ⅜ in. thick; seed pouch ¼ in. long, In moist grounds.

118. Greenish-white Sedge. *Carex albolutescens.* 1½ ft. high; three to eight spikes, short oblong, ⅜ in. long and ¼ in. thick, close; seed pouch 3-16 in. long. Wet soil.

Note.— Very similar to each other in the appearance of the ear are Nos. 1 to 3, 4 and 5, 6 to 12, 14 and 16, and 15, 17, 23, 30, 31, 52, 53, 62, 63. In Nos. 1 to 3, the spikes are loose, in 4 and 5 close and globular; in Nos. 6 to 12, 14 and 16 the spikes are dense, oblong and long-beaked, while in 15, 17, 23, 30, 31, 52, 53, 62 and 63 they are short-beaked. Nos. 13, 25, 32 to 39, 48 to 50, 54 to 57, 59 and 60 are drooping, and 18, 40, 41, 71 and 78 are few-flowered. Nos. 20 to 22, 24, 26, 28, 42, 51, 58, 61, 64 to 70, 74 and 75 have stout ears. Nos. 19, 29, 43 to 47, 72, 73, 76, 77, 79 to 86, 93 to 95 and 99 are like *C. pennsylvanica;* Nos. 87 to 92 and 108 like *C. vulpina*, and Nos. 96 to 98, 100 to 107, 109 to 118 like *C. leporina.*

RUSH FAMILY. *Juncacea.*

Plants with flowers from the side of the stem.

Flowers single on the branches of the bunch.

1. Common Rush, Bog or Soft Rush. *Juncus effusus.* 2½ ft. high, stout, grows in tufts. In swamps and wet grounds everywhere.

2. Thread Rush. *Juncus filiformis.* 1 ft. high; stems thread-like, roots creeping; flowers few, small and single on the simple branches of the bunch. In the mountains.

3. Baltic Rush. *Juncus balticus.* 1½ ft. high, with creeping roots. In size and appearance between Nos. 1 and 2. Near the shore.

Flowers in small clusters on the branches of the bunch.

4. Sea Rush. *Juncus maritimus.* 2½ ft high, stout; branches of the flower bunch long and straight, and the bunch supported by long bracts. On the sea shore.

Plants with flowers on the top of the stem.

Flowers single on the branches, though often in clusters.

5. Brown-fruited Rush. *Juncus pelocarpus.* 1 ft. high; stems thread-like. On the margins of ponds.

6. Slender or Yard Rush. *Juncus tenuis.* 1 ft. high; stems wiry. Everywhere in the wood roads.

7. Toad Rush. *Juncus bufonius.* 7 in. high; flowering bunches one-third of the size of the plant; stems like No. 6, with short instead of long bracts. In dried-up ponds and damp roads.

8. Highland Rush. *Juncus trifidus.* 8 in. high; like No. 6, with only one or two flowers in the axis of bracts. In mountains.

9. Greene's Rush. *Juncus greenei.* 1¾ ft. high; in dense tufts, with slender, round leaves which are channeled on the upper side; scales of the fruit pointed and shorter than the fruit-flowers, mostly sessile. Near the coast.

10. Black Grass. *Juncus gerardi.* 1½ ft. high; like No. 9, but with creeping roots; flat leaves; mostly long-stemmed flowers. Scales shorter than fruit but rounded. Abundant in soft marshes.

11. Forked Rush. *Juncus dichotomus.* 2 ft. high; like No. 9, but densely tufted, and flowers sessile, but larger; the scales as long as fruit and pointed; branches of bunch straight and long, and bracts short. Near the coast.

Flowers in close heads or bunches on the branches.

12. Grass-leaved Rush. *Juncus marginatus.* 1½ ft. high; leaves flat; fruit capsule rounded at the top, and inner three scales blunt and

larger than outer scales, which are as long as fruit and pointed; only few flowers in a bunch. In grassy land.

13. JOINTED RUSH. *Juncus articulatus.* 1½ ft. high; leaves round, pulpy, soft, with joints inside which can be felt, and on the lower part wilted leaves can be seen; many flowers in a bunch. Near the coast.

14. BAYONET RUSH. *Juncus militaris.* 2 ft. high; like the last, but with hairlike leaves in the water, and round, jointed, stout leaves above. In shallow ponds.

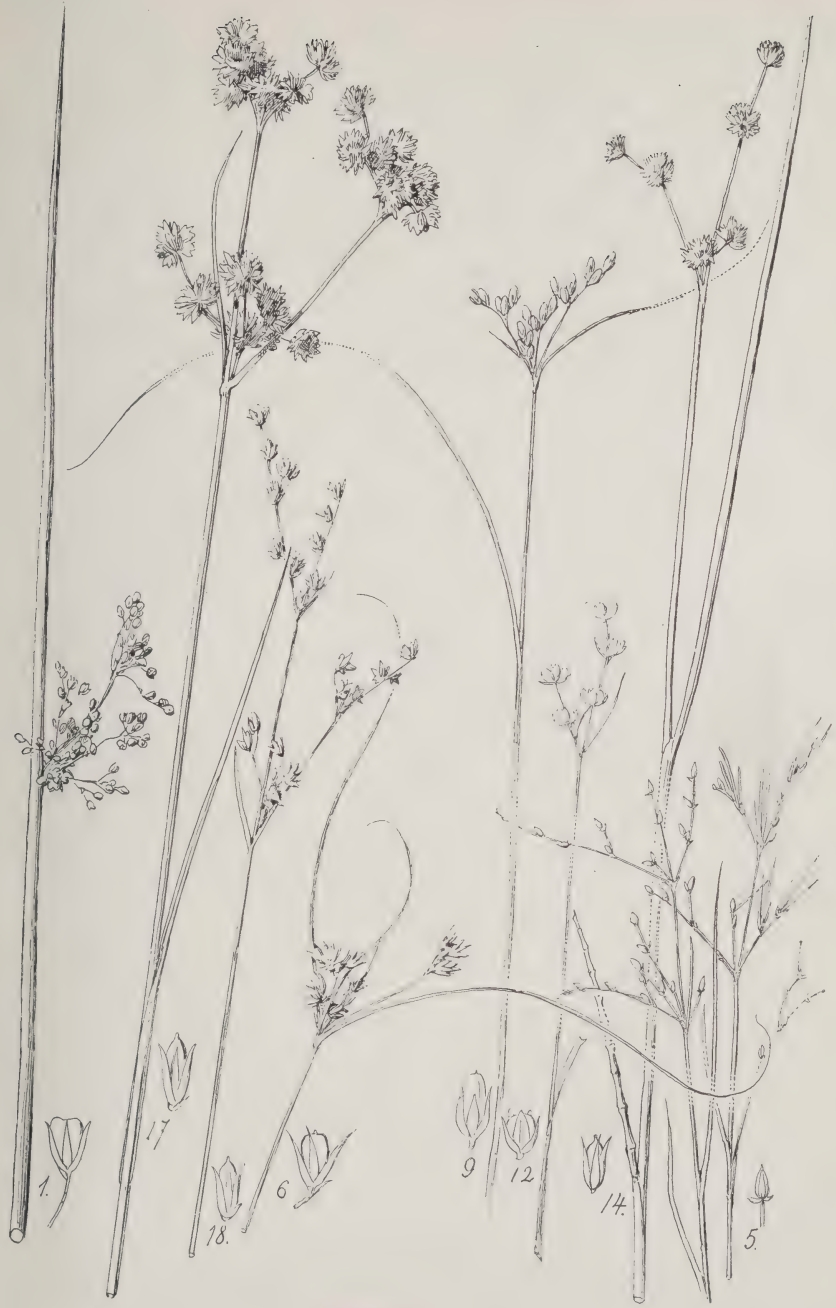
15. RICHARDSON'S RUSH. *Juncus richardsonianus.* 1 ft. high; like No. 14, but scales shorter than the fruit and inner scales shorter than the outer.

16. KNOTTED RUSH. *Juncus nodosus.* 1¼ ft. high; like No. 14, with only one or two heads; fruit larger than scales and inner scales larger than the outer.

17. CANADA RUSH. *Juncus canadensis.* 2½ ft. high; leaves round and jointed, stem stout and hard, flowering late in autumn in dark red-brown heads, seed tailed on each end; scales one-third smaller than fruit.

18. SHARP-FRUITED RUSH. *Juncus accuminatus.* 2 ft. high; scales as long as fruit; seed pointed at each end.

PLATE XXVIII



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